Telephony.

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Why Buy American Telephone Stock?

Reports of the success of the $50,000,000 stock offering of the American (Bell) Telephone & Telegraph Co., while they may be properly discounted in large measure as attributable to inspired statements from Boston, are yet sufficiently plausible to arouse that old-time curiosity of the one who knows as to why. Why do people buy this stock, unless it be that strength is inferred from the sheer bulk of the corporation?

True, certain New York financial papers invariably refer to the A. T. & T. Co., and to most of its subsidiaries, good or bad, as solid, substantial going concerns. We cannot recall reading an adverse statement in answer to any inquiry addressed to these papers regarding the stock or bonds of any of the Bell companies.

It might not, however, be amiss to recall that Metropolitan Traction also had bigness to lend it an air of prosperity, and that the securities of that financial abortion were also consistently endorsed by these same papers almost up to the day of its dreadful crash.

But, whether it is the persistent publicity, or the size of the corporation, or the fact that it partially performs an absolutely necessary public service, or that it has thus far managed to pay an 8 per cent. dividend, the fact remains that some people still lend an attentive ear to the offerings of its stock. And this is the more strange at this time when it is apparent to even the most casual observer that the Bell system faces an order of dissolution from the Supreme Court of the United States similar to those now in process of enforcement against Standard Oil and the tobacco trust.

Dispatches last week stated that the so-called electrical trust has capitulated, a probability forecast some time ago by this paper. It has agreed to dissolve and cease its admitted violations of the Sherman anti-trust act. As TELEPHONY has shown, the Bell system is hopelessly entangled with the electrical trust. It is not only a twin brother, but the two are practically Siamese twins, joined by a ligament which permits the financial life blood of each to flow to the other. The government has long been checking up the activities of the Bell telephone system in the operating field, in connection with its activities in the electrical manufacturing field, and a recent statement from the Department of Justice, at Washington, to the effect that all corporations known to be transgressing the Sherman law will be proceeded against in the courts as rapidly as the cases can be prepared, makes it a practical certainty that the Bell organization will shortly feel the hand of the law.

The process of reorganization through which the tobacco trust and Standard Oil are now going gives us a very fair idea of what the stockholder of the A. T. & T. Co. will face when that time comes. Thirty-five subsidiary oil companies exist under the control of the holding company, the

CALIFORNIA COURT'S CONCLUSION AS TO PUBLIC ATTITUDE TOWARD MONOPOLY

The trend of modern legislation, both national and state, has been and is to discourage and, indeed, to destroy monopolies of every kind and description.

The policy of our government, if it has not always been, is certainly now to encourage and promote free and unhampered competition in all classes of business and in the sale of all sorts of commodities, particularly the necessaries of life.

To this end there has been added to our statutes, federal and state, a variety of wholesome laws, whose aim is to prevent or destroy and punish penally what has been colloquially, but in many instances justly, characterized as predatory trusts and combinations—in other words, monopolies which could control the markets of the world in their lines of activity and thus impose upon the consumers the most outrageous and even unbearable burdens.

At this deplorable condition, we say, modern legislation, sustained by a powerful and unmistakable common sentiment, has aimed its well charged batteries.—From decision of California District Court of Appeals in favor of Postal Telegraph vs. Western Union Telegraph.

Standard Oil Co. of New Jersey. In the redistribution of the stocks of these companies every stockholder in the New Jersey corporation is to receive shares in the subsidiary companies pro rata according to his holdings in the parent organization.

For example, a man owning a single share of stock, which could be bought today on the curb for $659, will have, after December 1, a share in Standard Oil of New Jersey worth at par $100; he will have a tenth of a share in the Southern Pipe Line Co., $10; a trifle more than a quarter of a share in the National Transit Co., $25.45; three-twentieths of a share in the Standard Oil Co., of New York, $15; in the Chesbrough Manufacturing Co., twenty-eight cents' worth at par; in the Colonial Oil Co., about 25 cents' worth at par; in the South Penn Oil Co., a fortieth of a share, $2.50. Among the twenty-six other corporations in which he will have stock will be the Swan & Finch Co., in which he will have ten cents' worth; and the Washington Oil Co., in which he will have precisely seven and 37-250 cents' worth.

The situation of the Bell company will be but little, if any, better. It may not be quite as dismal as it would have been a year or two ago, for the reason that the parent company has been exceedingly busy during that time in covering up the plague spots in its system by absorption. In this manner the Central New York, Hudson River, New York & Pennsylvania, Empire State, Bell of Buffalo, Chesapeake & Potomac, and lastly, the Rocky Mountain Bell, all non-dividend-payers and all hopelessly in debt, have been cleaned up by being merged with going concerns. There still remain several, however, such as the Central Union, Missouri & Kansas, and others, which have either paid no dividends for years, or which are rapidly approaching the non-dividend class.

In all, there are now about twenty-two Bell subsidiary companies, including those controlled by the Western Telephone & Telegraph Co., that financial anomaly—a holding company in a holding company—which will serve to still further complicate the situation, and the man holding a share of stock in the A. T. & T. will be compelled to accept fractional shares in all these companies, those which pay dividends, as well as those which do not.

Couple this state of affairs with that briefly indicated by C. C. Adams, vice-president of the Postal Telegraph-Cable Co., in his open letter to the attorney general of Texas, which appeared in last week's issue, and we have a truly ideal condition for the minority stockholder of the A. T. & T. Co. when the government calls it to an accounting. "That combine," said Mr. Adams, referring to the Bell-Western Union amalgamation, "is approaching its Waterloo in its finances." And this belief, it may not be amiss to state, Mr. Adams shares in common with many shrewd financial men of both Wall street and Milk street.

A Confusion of Names.

The laws and commercial customs of the country give very definite protection to trade names. They are considered to be valuable property subject to protection of the same class which is accorded to any valuable possession. There are times when the violation of these rights, if not occurring maliciously, prove to the benefit of the rightful owner of the name on the principle that "imitation is the sincerest form of flattery."

Galesburg, Ill., has two competing companies, who are simultaneously preparing to install a type of apparatus which they consider will give the public advantages of a more speedy service, and there is evidently considerable rivalry for business. An article relating to the Bell exchange recently published in the local press contained the following:

> The switchboard is very new and up-to-date and cost in the neighborhood of $50,000. The ringing is done by machinery and this part is automatic, and it is a model of the auto-manual switchboard. The operators press buttons to connect parties and the rest is done by machinery. The operator has no "listening key" as formerly, and the conversation is strictly private.

The confusion of nomenclature is somewhat amusing to a phone man who is fully aware of the significance of the terms "automatic" and "automanual" when applied to telephone equipment. Both of these names have come to have a very definite significance and association with particular types of apparatus. It seems that a very apt response to this article relating to the Bell equipment was the one made by General Manager F. C. Woods, of the Galesburg Union Telephone Co., who printed in the following issue of the paper, under the head, "It Speaks Well for the Auto-manual," this letter:

> Your article in yesterday's paper relating to the new Bell switchboard contains the following sentence: "It is a model of the auto-manual switchboard. The operators press buttons and the rest is done by machinery." The Galesburg Union Telephone Co. is installing the only Automanual in Illinois, so that your reporter was mistaken or misinformed.
>
> If thorough investigation were made, you will find that the Bell company is installing a manual switchboard with automatic ringing. Cords and plugs with lamps to show when a subscriber is through talking are used in the same manner as in all manual switchboards. The reporter or the Bell company got mixed up, for it is the Galesburg Union Telephone Co. which is installing the Automanual, which has the good features of finding a "waiting operator, automatic disconnect, automatic busy test, etc." If your reporter was misinformed and the Bell company wishes to claim the good features of our new system, it speaks well for the Automanual.

Summer Collections.

This is the time when the telephone company is helping to pay Mr. Average Citizen's vacation bills. It is hard to get in money when hot weather is here. Some companies have a notion that it pays to go easy and make friends, even if it is necessary to trim the ship very carefully and watch out for things which mean extra expenditure. On the other hand there are a good many managers who believe that a little firmness, exercised with judicious tact, can be applied right at this season.

Keeping hot weather collections up to the mark is an interesting study, and a live man's job. We should like to be able to publish the methods and views of some of the men who are making a success of it, and we extend to them a very cordial invitation to discuss the topic in our columns.

TAKING THE COUNT

Place: Everywhere. Time: Any time during the last fifteen or twenty years.

Chicago City Council Will Resist Installation by Bell of "Nickel-First" Pay Telephones.

Action by the Chicago council upon the question of doing away with the telephones in which a nickel is required before connection with the operator is obtained, is likely to be taken at the first meeting after the council vacation. Announcement has been made by Alderman Britten that he intends to present at that meeting an ordinance compelling the telephone company to remove these telephones now in service and to refrain from further installation.

His announcement followed the delivering of an opinion by Corporation Counsel Sexton that such an ordinance could be passed under the police powers of the city. An effort will be made to have the council take action upon the ordinance without referring it to a committee, several aldermen having promised to support a motion for the suspension of the rules for this purpose.

It is asserted by Alderman Britten that the "nickel first" telephones constitute a serious menace.

"The installing of these devices has deprived the persons in whose homes they are of protection to which they are entitled against fire and robbers," he said. "With these devices at work it is impossible to obtain the attention of the telephone operator until a nickel has been deposited in the box. Every one who is familiar with the nickel in the slot telephones knows how often one finds one's self without a nickel.

"A man's home might be burned down, or he might be robbed and murdered simply because he did not have a coin of the right size at the right time."

Corporation Counsel Sexton holds that the city can regulate by its police power in case the service rendered is unreasonable or unfair. His opinion says:

"Whether or not a coin box for receiving five cent pieces where the deposit must be made before communication can be had with central is an improvement over the coin box in which one drops a nickel upon request of central is rather an engineering question than a legal one.

"Through careless operation the coins so deposited frequently will not be returned to the patron. In my opinion, if the use of the new device is unreasonable and unfair to the company's subscribers the City Council has authority to pass an ordinance prohibiting this method of operation. The telephone company ordinance does not expressly authorize it and by the exercise of the police power the council can prohibit it."

Bell Reduces Residence Rate at Louisville.

The Cumberland (Bell) Telephone & Telegraph Co. has ordered a fifty-cent decrease in party line rates in Louisville, Ky., affecting between 4,000 and 5,000 subscribers. The reduction is effective August 1. This is the first voluntary cut ever made by the Bell lines in Louisville. It was brought about by the force of popular opinion when appeal to the highest court in the state had failed and further action before the supreme tribunal of the nation was pending. Cumberland party line rates are now $2.50 per month for residence service, instead of $3.

North Dakota Convention Postponed to September.

The North Dakota Independent Telephone Association has postponed the date of its annual convention from August 15-16, as previously announced, to September 27-28. The meeting will be held, as before stated, at Bismarck. L. C. Lane, Kensal, N. D., is secretary. Further details will be given out soon.

Saskatchewan Buys Municipal System.

The municipal telephone system of Saskatoon, Sask., has been sold to the provincial government for $73,000. Hon. J. A. Calder, minister of telephones, has visited the system and has arranged to make a number of improvements.

Oregon Independent Buys Bell Lines, Raises Rates and Now Faces Probability of New Competition.

A short time ago the Home Independent Telephone Co., of Enterprise, Ore., purchased from its competitor, the Pacific Bell, the latter's system in the territory served by the Home company. Since that time the "Home" company has been gradually, but materially, increasing the rates for service, until now between 80 and 90 per cent. of its subscribers have signed resolutions of protest and have agreed to discontinue the service unless the old schedule is restored.

Committees of business men from the commercial clubs at Enterprise, Wallowa, Joseph and Lostine devoted their entire attention for a time to the circulation of resolutions of protest, and met practically unanimous endorsement. Nearly 400 of the 461 subscribers in the four exchanges of Enterprise, Joseph, Wallowa and Lostine signed and nearly all those remaining are represented by people whom the committees have been unable to see for one reason or another.

There is as yet no concerted movement for the organization of another telephone company, but it is apparent that if the demands of the people are turned down, a second company will be organized.

It is learned that there is also a similar movement on foot in Union county, especially in Elgin, Imbler, Cove and Union.

Independent Telephone Activity in California.

With the Colusa County (Independent) Telephone Co. as the leader, a number of companies have been developed on the west side of the Sacramento Valley. Following the plan of the Colusa company, Glenn business men have organized a company. The Tehama County Telephone Co. is the last to be started. It is stated that this company will be ready for business some time this month. Red Bluff will have an all cable system. After this company has been established, Butte and Shasta counties will be invaded.

Refuses Bell Sublicensee Contract.

For some time there have been current rumors that the Johnsonville (Independent) Telephone Company, Johnsonville, N. Y., would become a Bell licensee, but at a recent meeting of the directors it was voted to remain with the Independents. This is a severe disappointment for the Bell interests. Had the Johnsonville company become a Bell connection it would have effectually prevented the Independents from making connection with southern Vermont. New York state Independents have already crossed the state line near Granville.

Postal Telegraph Gets Injunction.

The Postal Telegraph-Cable Co. recently filed a bill in equity in the Chancery Court of New Jersey to enjoin the municipal authorities of Hudson county from interfering with the construction of its telegraph lines on highways. Vice-Chancellor Garrison has granted an order which gives the municipality two weeks within which to pass reasonable regulations in regard to construction, and in case the municipality does not do so within the time the company is authorized to proceed with its construction without any regulation whatsoever.

Saskatchewan Line Being Run to Winnipeg.

The Saskatchewan government is installing long distance lines to connect with the Manitoba system at Winnipeg. The Saskatchewan line will be run through to Battleford. It has already reached Langham, Sask.

Michigan State Bell Regular Dividends.

The Michigan State (Bell) Telephone Co. has declared quarterly dividends of 1¾ per cent. on the common and 1½ per cent. on the preferred stock of the company outstanding.

$1,000,000 for Independent Expansion in Chicago

Court Authorizes Issuance of a Million Dollars in Receivers' Notes by Illinois Tunnel Co. to Provide for Extension of System—More Forthcoming as Required—Work to be Pushed as Rapidly as Possible—Long Distance Connection by August 15

Judge Kohlsaat, in the United States Circuit Court, has authorized the receivers of the Illinois Tunnel Co., of Chicago, to issue at once $1,000,000 of receivers' notes, the proceeds from which are to be devoted to the extension in that city of the automatic Independent telephone system.

Of the total authorized, $500,000 of the notes have already been placed and C. O. Frisbie, president of the Illinois Tunnel Co., states that the work of expanding the system will be prosecuted with the utmost diligence.

"The development of the plant of the Illinois Tunnel Co.," said Mr. Frisbie to a representative of TELEPHONY, "is being pushed with all the speed possible. We now have plans under way to extend our lines at once both north and west in the city to reach the districts in which the greatest demand for the service exists at present.

"Connection at the city limits with the long distance lines of the Inter-State Independent Telephone & Telegraph Co., of Aurora, will be accomplished about the middle of the month.

"We are rapidly working out a comprehensive scheme of development in Chicago which will, in a comparatively short time, place the Independent service at the command of every section of the city. Funds for this purpose will be forthcoming as fast as they are needed."

There are at present in operation approximately 27,000 Independent stations in Chicago, while over 30,000 contracts in addition are now on file in the company's office. These are being filled as fast as a large crew of installers can handle them, and are increasing the list of automatic users at a rate which demands a frequent reissue of the directory.

As TELEPHONY has shown, the announcement, some time ago, that the Independent systems in the vicinity of Chicago were to be given connection with the automatic plant of the Illinois Tunnel Co. has stimulated construction to an amazing extent throughout Illinois and the other states adjoining. Contracts for material and equipment, largely for toll and long distance lines, aggregating over $1,000,000 were reported at a recent meeting of the new Illinois Toll Clearing Co., and this was only a beginning.

The stimulus of the Chicago connection is also being strongly felt locally by the Independents throughout the territory mentioned. New subscribers are being added rapidly and business men are increasing their facilities with the intent to be fully prepared to utilize the long distance service into and out of Chicago so soon as it is established.

Occasionally a rumor still gains ground that the Independent company in that city is laying on its oars, as it were, and is perfecting plans to sell out to the Chicago Bell. This is emphatically denied by officials of the Illinois Tunnel Co., and these denials are borne out effectively by the activity which is evidenced in the continued extension of the system. It is certainly only reasonable to conclude that no telephone corporation, which is on the eve of turning over its properties to a competitor, would consider the expenditure of an additional $100,000,000.

The story recently reached the ears of Fred A. Dolph, receiver of the Inter-State Independent, and was promptly laid to rest by him with a few clear and pungent remarks. Mr. Dolph is singularly well qualified to speak with knowledge of the situation, inasmuch as both his company and the Illinois Tunnel Co. are under the jurisdiction of Judge Kohlsaat, by whose orders the physical connection of the plants is now being accomplished.

Keystone Company Earns 14.8 Per Cent. on Preferred

Philadelphia Independent Closes Fiscal Year with Satisfactory Gains in Gross and Net Earnings and Net Surplus Over Last Year, When Less Than 12 per cent. Was Earned on Preferred—Station Figures and Details of Half Million Expenditure to Issue Soon

The Keystone (Independent) Telephone Co., Philadelphia, has issued a condensed statement of its earnings and expenses for the fiscal year ended June 30, 1911. This shows that the company has earned this year 14.8 per cent. on its outstanding $1,936,850 of preferred stock, as compared with slightly less than 12 per cent. last year. The complete pamphlet report will be issued later.

The revenue account for the year just closed shows gross earnings of $1,153,788, as against $1,126,030 in the 1910 year, a gain of $27,758. Expenses were $572,004, compared with $558,079 last year, an increase of $13,925. Net earnings were $581,784, or $13,833 greater than in the previous year.

Interest charges were reduced $9,372, leaving a net surplus for the 1911 year of $288,401, as against $265,196 last year, an increase of $23,205.

From the 1910 year's net surplus, however, there was deducted a replacement reserve of $32,787, which was not included in the current year's figures. The reason for this is said to be that the depreciation reserves of the Keystone company now aggregate approximately $500,000, a sum held to be sufficiently large to safeguard the property.

The condensed revenue figures for both the 1910 and 1911 years are here given.

REVENUE ACCOUNT.
Year ended June 30.

	1911.	1910.	Increase.
Gross earnings	$1,153,788	$1,126,030	$27,758
Operating expenses and taxes	572,004	558,079	13,925
Net earnings	$ 581,784	$ 567,951	$13,833
Interest charges	293,383	302,755	*9,372
Net surplus	$ 288,401	$ 265,196	$23,205

*Decrease.

The June figures of earnings and expenses compare as below:

REVENUE ACCOUNT.
Month of June.

	1911.	1910.
Gross earnings	$97,045	$97,990
Operating expenses and taxes	46,274	45,307
Net earnings	50,771	52,683
Less interest charges	24,446	24,946
Net surplus	26,325	27,737

The ratio of operating costs to gross income was held at about the company's usual level during the year just passed, being 49.5 per cent. This compares with 49.6 per cent. for the 1910 year. The figures for June, also published at this time, show an operating ratio even lower, 47.6 per cent.

No statement regarding station growth has yet been given out for publication, but these will appear, together with other details of expansion, including the expenditure of upwards of $500,000, in the complete pamphlet report, which will issue in a short time.

Kansas Public Utilities Commission to Investigate Telephone Rates Throughout the State.

It is extremely probable that there will be some radical changes made in the rate schedules of some of the telephone companies coming under the jurisdiction of the state Public Utilities Commission. The commission is now sending out letters to all of the telephone companies in the state to determine just what companies come under its jurisdiction.

Under the law enacted by the last Legislature all mutual telephone companies and stock or private companies which serve principally a single town are outside the jurisdiction of the commission.

As soon as the information is secured the commission expects to make an order requiring all the companies under its control to file a schedule of their rates with the commission, as the railroads do now.

The preliminary reports indicate that there is a wide variance in charges for similar telephone service in different towns and counties of the state. In some cities and counties the rates appear to be very low, while in others they appear to be unreasonably high. When all the reports are in the commission will make a close study of the problem.

The members of the commission regard the investigation of the telephone situation in Kansas as about the most important matter that is to come before it.

Death of J. C. Duncan, Sr.

J. C. Duncan, Sr., president and general manager of the Peoples Telephone & Telegraph Co., of Knoxville, Tenn., died on August 1. He was seventy-two years of age.

Mr. Duncan was a pioneer in telegraph work, having served as operator during the Civil War. At the close of the war he was made manager of the Western Union Telegraph company's office at Knoxville. In 1894 Mr. Duncan organized the Peoples Telephone & Telegraph Co., which system he controlled up to the time of his death. He was one of the prime movers in bringing the Postal Telegraph-Cable Co. into Knoxville, believing that "competition is the life of trade." His son, J. C. Duncan, Jr., is superintendent of the Peoples company at Knoxville, and another son, Malcom, is associated with the Automatic Electric Co., at Chicago.

Independent Company Incorporates at Rock Island.

The Tri-City Automatic (Independent) Telephone Co., of Rock Island, Ill., has been incorporated, with a nominal capital stock of $1,000. This company is backed by the promoters who have been seeking the opportunity of purchasing the system of the Union Electric Telephone Co., which operates in Davenport, Moline and Rock Island. Failing in its efforts to buy the existing system, the company has now applied to the city for a franchise, and is circulating petitions for the purpose of bringing the matter to a popular vote.

Mackay Telegraph Closes New Texas Contract.

F. W. Conger, division superintendent of the Mackay Telegraph & Cable Co., of Texas, which has headquarters at Dallas, has closed a contract with the Independent companies at Sherman for the joint use of wires, and will shortly open offices at Sherman, Dennison, Bonham, Honey Grove and Paris.

July Output of Securities, as Compiled by New York Paper Shows Big Gains Over Last Year.

According to the *Journal of Commerce,* of New York City, the output of new securities during July reached $129,912,000, against only $60,201,000 a year ago, an increase of $69,711,000 contributed almost wholly by the sale of numerous small blockc of industrial issues. For the first seven months of the current year the flotations of bonds, notes and stocks have aggregated $1,359,379,950, an increase of $250,747,000.

The following table shows the new issues last month, along with comparisons with the same month in 1910:

RAILROADS.

	1911.	1910.	Changes.
Bonds	$ 42,129,000	$ 4,350,000	+$ 37,779,000
Notes	3,125,000	14,869,000	— 11,735,000
Stocks	8,730,000	15,000,000	— 6,270,000
Total	$ 53,984,000	$ 34,210,000	+$ 19,774,000

INDUSTRIAL CORPORATIONS.

	1911.	1910.	Changes.
Bonds	$ 33,820,000	$ 14,980,000	+$ 18,840,000
Notes	10,200,000	2,800,000	+ 7,400,000
Stocks	31,908,000	8,211,000	+ 23,697,000
Total	$ 449,978,050	$ 405,155,600	+$ 44,822,450
Grand total	$ 129,912,000	$ 60,201,000	+$ 69,711,000

A summary of the financing accomplished since the opening of the current year follows:

RAILROADS.

	1911.	1910.	Changes.
	1911.	1910.	Changes.
Bonds	$ 567,564,900	$ 440,106,440	+$127,458,460
Notes	256,905,000	173,400,000	+ 83,505,000
Stocks	84,932,008	89,970,910	— 5,038,910
Total	$ 909,401,900	$ 703,477,350	+$205,924,550

INDUSTRIAL CORPORATIONS.

	1911.	1910.	Changes.
Bonds	$ 223,026,000	$ 187,923,000	+$ 35,103,000
Notes	46,126,000	27,900,000	+ 18,226,000
Stocks	180,826,050	189,332,600	— 8,506,550
Total	$ 449,050	$ 405,155,600	+$ 44,822,450
Grand total	$1,359,379,950	$1,108,632,950	+$250,747,000

This is regarded as presaging a bright outlook for the coming fall and winter and is of particular interest to telephone companies who are contemplating new financing.

Seattle Alderman Proposes to Buy Independent System.

Giving full credence to the statements of E. E. Webster and others that the Independent Telephone Co., of Seattle, Wash., is not owned and operated by the Pacific (Bell) Telephone & Telegraph Co., Councilman Oliver T. Erickson has announced that he would introduce a bill providing for the condemnation of the property by the city. This action will not be taken, Erickson said, unless his plan to establish a municipal automatic telephone system fails.

Arizona Bell Sublicensee Changes Name.

The Consolidated Telephone, Telegraph & Electric Co., of Tucson, Ariz., a sub-licensee of the Bell system, has changed its name to the Arizona Telephone & Telegraph Co. Eppes Randolph is president of the company.

IMAGINE FOR A MOMENT that the entire telephone field is wondering what you are doing and can find out only through TELEPHONY'S columns. Then send us a letter or a post card and relieve the suspense.

The Montana Independent Telephone Company

A Fine Report—Interesting Comparison With Bell—Little Depreciation at Butte—A Live Company

By J. C. Kelsey

Some of the Bell horror of duplication has spread to Butte. People there do not believe in duplication, apparently.

The Montana Independent operates 5,000 telephones in that city, while Bell handles 1,000.

To show that there is a great lack of harmony between Bell licensees and the American Telephone Co., the Bell company at Butte enthusiastically advocates two telephones.

It is a mystery why even those 1,000 Bell subscribers do not throw out their telephones.

In the Ingersoll case before the Dominion Railway Board, the Bell argued that to give the 1,000 Independents enforced Bell connection would act to drive out their 267.

I argued that there are enough mean, jealous and bull-headed people in any community to oppose any successful local enterprise and give the Bell that 25 per cent. proportion.

Take away the long distance from the Bell subscribers, and it would not decrease their subscriber list a single subscriber.

Human nature is a curious organization!

Acording to Bell preachments, the Montana Independent should have every telephone in Butte. But they are not consistent. Bell is a slave to tradition. That is why they have suffered so greatly in western communities.

The Montana Independent Telephone Co. started at Butte. Today, its field of influence extends from Billings to Spokane. A great, wide-awake and growing country—everything is appreciating—no decay anywhere.

President Lane's report reveals the extent of this great enterprise.

THE REPORT.

Herewith is respectfully submitted a general statement covering the business of the Montana Independent Telephone Co. for the year ended April 30, 1911.

On April 30, 1911, the number of telephones operated by this company was 7,278, being an increase during the year of 2,095.

The company owns and operates telephone exchanges as follows: Butte, Mont.; Anaconda, Mont.; Missoula, Mont.; Three Forks, Mont.; Deer Lodge, Mont.; Stevensville, Mont.; Basin, Mont.; Logan, Mont.; Drummond, Mont.; Boulder, Mont.; Hamilton, Mont.

The company owns and operates 714½ miles of long distance lines connecting its various exchanges. These lines carry 3,642 miles of wire, of which two-thirds is copper. The long distance system consists of the following lines: Butte to Anaconda; Butte to Logan, Butte to Helena, Helena to Great Falls, Anaconda to Wisdom, Anaconda to Cable, Butte to Deer Lodge, Deer Lodge to Missoula, Missoula to Hamilton, Great Falls to Conrad, Drummond to Helmville, Three Forks to Trident, Branch to Pipestone Springs, branch to Gregson Springs Silver to Gould, Mont.; branch to Boulder Hot Springs.

It will be noted from the statements included in this report that there have been added to the plant of this company during the past year extensions representing an investment of $137,636.16, as follows:

Lincoln-Gould line	$ 5,000.00
Big Blackfoot properties	5,000.00
Additions and extensions Anaconda district	3,423.21
Additions Butte district	47,711.53
Additions Missoula district	23,952.05
Additions long distance lines	40,945.20
Uncompleted estimates (extensions not completed)	11,604.17

In addition to this the company has acquired the stock of the Anaconda & Big Hole Telephone Co. and a controlling interest in the stock of the Montana Co-Operative Telephone Co., operating an exchange at Whitehall, Mont.

The investment for additions to the plant include the following:

Completion of telephone exchange at Missoula, Mont., with 1,102 telephones connected, and an automatic central office equipment installed sufficient to furnish service to 1,700 subscribers.

A standard long distance toll line has been constructed from Missoula to Stevensville, Mont., carrying two circuits of No. 10 copper wire and three circuits of iron wire.

A standard long distance toll line has been completed between Stevensville and Hamilton, equipped with two circuits of No. 10 copper and two circuits of iron wire.

Telephone exchange at Hamilton, Mont., has been completed and 152 subscribers connected, and with capacity furnished for a large additional growth. The installation of additional telephones is now under way.

A standard long distance line connecting Deer Lodge and Missoula has been completed during the past year.

The long distance lines of the Big Blackfoot Telephone Co. connecting Drummond and Helmville, were acquired during the year, and have been rebuilt and put in condition for commercial business. Forty-eight telephones are furnished long distance service on these lines.

Extensive additions have been made to the telephone exchanges at Deer Lodge and Anaconda.

Long distance lines have been completed from Anaconda to Cable, Mont., and in connection with this line, thirty rural subscribers are furnished Anaconda service.

Exchanges were built at Basin and Boulder, and line extended from Boulder to Boulder Hot Springs.

Extensive additions were made at Three Forks, and a complete cable plant installed at that point.

Long distance line, connecting Conrad with Great Falls, a distance of sixty-nine miles, was completed during the year.

In the city of Butte, new long distance lines were erected, bringing all long distance circuits directly into the central office.

A heavy expenditure was made in Butte during the year for new cables, which will probably provide ample wire capacity for all future growth of the company in the city of Butte. Additions and extensions made during the year have been accomplished without the sale of additional securities from the treasury of the company.

It will be noted from the attached reports that the revenues of the company, both from telephone rentals and long distance service, have shown steady increases from month to month during the year. It will also be noted that the operating expenses of the company amount to only 44.6 per cent. of the gross revenue.

THADDEUS S. LANE, President.

The annual statement of earnings and expenses for the year ended April 30, 1911, reveals the following:

REVENUE ACCOUNT.

Year ended April 30, 1911.

Rental earnings	$183,844.65	
Toll earnings	34,144.65	
Real estate earnings	1,250.00	
Leased lines earnings	1,041.66	
Miscellaneous earnings	5,312.53	$225,593.49
Toll commissions and mileage paid	$ 1,787.24	
Toll rebates and allowances	367.80	
Rental discounts	2,284.42	
Rental rebates and allowances	2,155.58	6,595.04
Gross revenue		$218,998.45

General expense	$ 46,721.76	
Commercial expense	3,519.69	
Operating expense—exchanges	24,589.03	
Operating expense—toll lines	2,393.36	
Maintenance expense—exchanges	17,099.40	
Maintenance expense—toll lines	3,673.04	$ 97,996.28
Net revenue		$121,002.17
Fixed Charges—		
Bond interest	$ 61,332.00	
Interest	2,815.80	
Taxes	4,500.00	
Insurance	840.00	
License	3,680.10	
Leased right of way	3,086.60	
Depreciation furniture and fixtures	758.84	
Uncollectable accounts	3,632.99	$ 80,646.33
Earnings for year		$ 40,355.84

The following monthly statement will show clearly how the property has gained. The annual report shows earnings for the year of practically $40,000.

The April earnings of 1911 show over $5,000, or an annual surplus of $60,000 and over for the coming year.

April earnings and expenses are as follows:

REVENUE ACCOUNT.
Month of April, 1911.

Telephone service	$18,164.71	
Toll service	3,907.20	
Revenue from leased real estate	100.00	
Revenue from leased lines	416.66	
Miscellaneous revenue	30.41	
		$22,618.98
Toll commission and mileage paid connecting companies	$ 646.99	
Toll rebates and allowances	155.70	
Discount on telephone rentals for payment in advance	1,132.96	
Other rebates and discounts	1,154.13	$ 3,089.78
Gross revenue		$19,529.20
Expense of operation and maintenance—		
General expense	$ 3,002.50	
Commercial expense	1,095.20	
Operating expense	1,588.68	
Operating toll lines	724.66	
Maintenance of exchanges	1,594.05	
Maintenance of toll lines	211.06	$ 8,216.15
Net revenue		$ 11,313.05
Fixed charges—		
Bond interest	$ 5,111.00	
Other interest	132.93	
Taxes	375.00	
Insurance	70.00	
License	150.00	
Leased right of way	336.60	$ 6,175.53
Net profit for month available for surplus		$ 5,137.52

One of the best parts of this remarkable report is a comparison with the 1910 Bell report. It shows that universal service cost $40.75, and local service cost but $31.52.

I do not believe that the public will ever be willing to pay $10 per year for the mythical advantage of universal service.

The table which follows shows average operating revenue and expenses per telephone, operating ratios, unit plant costs, etc., of the Montana Independent Telephone Co., as compared with the Bell Telephone system in the United States.

It will be noted that the expenses of operation and maintenance of each telephone owned and operated by the Montana Independent Telephone Co. were $14.68 for the past year, whereas the expenses of operation and maintenance of each telephone in the Bell system throughout the United States for the past year were $28.60.

It will also be noted that the net revenue of the Montana Independent Telephone Co. per telephone was $16.66 as against $12.15 net for each telephone operated by the Bell telephone company.

Attention is also-called to the fact that the expense ratio of the Montana Independent Telephone Co. to telephone earnings is 44.6 per cent. and that of the Bell companies 75.1 per cent.

Particular attention is called to the average plant cost per telephone, including exchange and toll construction. The Montana Independent Telephone Co. added to its plant during the past year 2,095 telephones at an average cost of $65.70. The average plant cost per telephone of the Bell companies was $142.00.

It will be noted that the net earnings of the company above all expense of operation, maintenance and fixed charges for the last month of the year exceeded $5,000.00. It is probable that the ensuing year will show an increase of revenue of at least 50 per cent. above that of the past year.

AVERAGE PER TELEPHONE

	Mont. Independent.	Bell Co.
Earnings—		
Telephone service	$27.12	$31.28
Toll service	4.40	9.47
Total	$31.52	$40.75
Expenses—		
Operation and maintenance	$14.86	$28.60
Net	$16.66	$12.15
Percentage telephone expense to telephone earnings	44.6	75.1
Percentage increase in telephone for one		

TELEPHONES OWNED AND OPERATED BY MONTANA INDEPENDENT TELEPHONE CO.

May 1, 1910 to April 30, 1911.

	1910								1911				
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Gain
Butte	4379	4421	4462	4502	4511	4580	4659	4712	4785	4838	4871	4880	501
Anaconda	486	493	491	498	509	518	519	522	521	520	532	534	48
Missoula	....	891	989	1012	1141	1160	1166	1191	1147	1107	1061	1102	1102
Three Forks	43	42	43	49	56	58	54	74	79	84	94	95	52
Deer Lodge	179	181	179	182	184	181	184	189	204	199	238	243	64
Stevensville	81	89	86	93	91	90	104	110	102	99	108	107	26
Basin	....	18	18	13	10	10	10	10	13	13	13	22	22
Logan	15	26	27	27	27	27	27	27	27	27	27	27	12
Drummond	....	....	....	....	....	....	40	48	48	48	48	48	48
Boulder	....	....	....	....	....	....	....	....	....	62	68	68	68
Hamilton	....	....	....	....	....	....	....	....	....	....	....	152	152
Totals	5183	6161	6295	6376	6569	6624	6763	6883	6926	6994	7060	7278	2095

year	40.4	11.8
Average plant cost per telephone (including exchange and toll construction)	$65.70	$142.00

Figures relative to Bell companies are taken from latest published "Annual Report of the American Telephone & Telegraph Co."

You can get an excellent idea of the growth of the Montana company by the following table:

REVENUE OF MONTANA INDEPENDENT FOR YEAR.

1910—	Exchange Service.	Tolls.	Total.
May	$ 12,801.44	$ 2,714.13	$ 15,515.57
June	12,562,74	2,192.92	14,755.66
July	12,700.93	2,418.25	15,119.18
August	13,783.34	2,749.72	16,533.06
September	15,538.08	2,775.11	18,313.19
October	15,887.30	2,766.52	18,653.82
November	15,686.50	2,714.76	18,401.26
December	16,597.04	2,362.17	18,958.21
1911—			
January	15,496.42	2,749.12	18,245.54
February	16,194.84	3,307.10	19,501.94
March	18,064.31	3,488.65	21,552.96
April	18,531.71	3,907.20	22,438.91
	$183,844.65	$34,144.65	$217,989.30

Real estate rentals	$ 1,250.00
Revenue from leased lines	1,041.66
Miscellaneous revenue	5,312.53
Gross revenue	$225,593.49

Opposite is a list of telephones owned by the company. It does not include telephones owned and operated by local co-operative and rural Independent telephone companies or associations not having sub-licensee or connection contracts.

The officers and directors of the Montana Independent Telephone Co. are: Thaddeus S. Lane, president; W. H. Hall, vice-president; John F. Davies, secretary-treasurer.

The finance committee is composed of W. H. Hall, C. J. Kelly and C. S. Jackman.

The executive committee consists of Thaddeus S. Lane, H. A. Gallwey and Patrick Wall.

The directors are: C. J. Kelly, L. O. Evans, Patrick Wall, J. J. Flannigan, H. A. Gallwey, G. E. Blackburn, A. B. Cook, C. F. Kelley, John F. Davies, W. H. Hall, John MacGinniss, C. S. Jackman, Thaddeus S. Lane.

Significant of this great enterprise is the Automatic Telephone News. It is a bright paper; it abounds with optimism; it does not "knock" its competitor.

It reveals a constructive policy, so unlike the Bell policy of destruction, preaching false depreciation for its competitors and ignoring its own.

I am sure that every telephone man realizes the necessity of boosting the telephone business. But the Bell Press Bureau makes counter attacks necessary.

The Montana Independent Telephone Co. may well be proud of its performance and its organization.

MORAL:—In the Bell calendar, duplication is only a crime when the Bell property is endangered.

No, Angeline, the Bell Telephone Co. doesn't own the universe yet, and from all present indications it is what a distinguished contemporary would call a helva way from it.

Home Independent, of Waco, Texas, Changes Name and Doubles Capital—Big Extensions Afoot.

The Home (Independent) Telephone Co., of Waco, Texas, has changed its corporate name to the Brazos Valley Telephone & Telegraph Co. and has increased its stock from $100,000 to $200,000. Extensive plans have been formulated for new construction and a wide extension of the company's holdings, first among which have been the acquisition of the Brazos Valley Telephone Co. and the Home Telephone Co., of West. Asked for an outline of what the company proposed to do, J. B. Earle, its general manager, replied:

"We prefer not to give out anything until we have done what we plan. Our policy is to do things and talk about them afterwards, and then we are sure to do as much as we promise. I shall be glad to give TELEPHONY all the details as soon as they have been worked out."

Pole Tax Decision in Pennsylvania.

The superior court at Wilkes-Barre, Pa., has handed down a devision which will be of interest to every borough in the state. Some time ago the borough of Nanticoke levied a tax of twenty-five cents on the telephone company for every pole within the borough and $1 for every mile of wire. The telephone company appealed and when the case came up for trial in the lower court Judge Fuller cut the pole tax in halves and wiped out altogether the tax on the wires.

MONTANA INDEPENDENT TELEPHONE CO.

BALANCE SHEET.

As of April 30, 1911.

ASSETS.

Plant account		$2,253,277.17
Investments		14,634.00
Bills receivable		6,884.33
Furniture and fixtures		6,829.62
Tolls and vehicles		805.38
Accounts receivable—cash in banks		28,637.91
Supplies		1,805.15
Prepaid expenses—		
Insurance	$ 287.46	
Directory expense	187.50	
Interest	15.00	
Lease privileges	2,009.00	
Toll coupon discount	604.00	$ 3,102.96
		$2,315,976.52

LIABILITIES.

Capital stock		$1,030,772.50
Bonds		1,022,200.00
Bills payable		71,962.66
Accounts payable		23,954.24
Interstate Consolidated Telephone Co.		21,581.36
Accrued liabilities not due—		
Taxes	$ 1,500.00	
Interest on bills payable	1,910.03	
Dividend No. 8	1,168.75	
Bond interest matured	1,557.00	
Bond interest accrued	25,550.00	
License accrued	600.00	$ 32,290.78
Reserve for uncollectable accounts		1,764.85
Unearned revenue—		
Toll coupons	$ 6,591.00	
Leased lines	3,958.33	$ 10,549.33
Profit and loss		$ 100,900.80
		$2,315,976.52

Tri-State Independent, of Minneapolis, Takes Important Part in Civic Celebration.

A civic celebration was recently held in Minneapolis which lasted a full week. It included various pageants of a historical nature, the important feature being the "Linking of the Lakes." Minneapolis has in the southwest part of the city four beautiful lakes contiguous to each other. It is planning to link all four of these by canal. Two of the lakes, Calhoun and Lake of the Isles, are already connected. The canal for the third, Cedar Lake, is practically completed.

During the week various parades were held, among which the one probably most important in point of number of floats and expenditure of money was the Industrial Parade. Many of the largest business institutions were represented, as were both telephone companies, by handsome floats. The Tri-State Independent had a float which embodied three distinct features, a pole line of two poles with cross arms and wires, a switchboard with an operator seated in position, dressed in white and carrying a white silk parasol and four large telephones, true in every detail, placed at the four corners of the float. On the pedestal on which these telephones stood were the names of the

An Elaborate Float at Minneapolis.

states represented by the company's service. The main pedestal on which the board stood represented Minnesota. The four telephones represented states as follows: North Dakota, South Dakota, Wisconsin and Iowa. The float was elaborately decorated with paper flowers.

Bell Telephone Company Now Adopts Independent Plan for Business Getting.

The Bell telephone company is not confining its adoption of successful Independent devices simply to the apparatus field. The plan of the Federal Telephone & Telegraph Co., of Buffalo, N. Y., of having each department spend three days in the year in concentration of their efforts upon business getting, appealed to the Colorado (Bell) Telephone Co. so much that it put the idea into practice and reports great success.

The ability of departments other than the commercial department to bring in business is shown, for example, by the statement that in the Denver exchange, during the three days, 169 new subscribers were obtained. Of the 169 the commercial department obtained 109, the traffic department was influential in getting 39, the treasurer's office 7, auditor's office 2, maintenance and equipment 4, construction department 7, and general manager's office 1.

The traffic department, outside the commercial department, proved the winner when it came to boosting, and moreover it clearly shows how close these departments are when it comes to dealing with the public. In other words, the traffic department obtained twice as many new subscribers as all the other departments combined.

Regarding the extension telephone, the commercial department was successful in placing 102, the traffic department 2, maintenance and equipment 3, auditing department 1, and general manager's office 1. The maintenance and equipment department, outside of the commercial department, led all other departments by a small margin.

Of the directory insertions, the commercial department took 41 contracts.

Ohio Grange Propounds Question: "Are Rural Telephones Destroying Our Neighborliness?"

One of the subjects for discussion before the Fulton County (Ohio) Pomona Grange, says the Toledo *Blade*, is this: "Are rural telephones destroying our neighborliness?"

It is the sad thing about all far-reaching inventions that they often overthrow institutions hallowed with tradition or cloaked with romance. The railroad caused the picturesque stage coach to fall into dust. The beautiful winged sailing vessels are disappearing before the steamship. So may it be that the telephone is playing the very old mischief with accustomed ways.

Only in sorrow can we think of the farmwife taking down the receiver of the telephone upon a Sunday afternoon and having a chat with a neighbor instead of dressin' up and goin' visitin' in the family carriage. It would pain us to believe that only members of the household are to be seen sitting upon the porch or out under the trees, their thirst for social intercourse having been satisfied with conversation over a wire.

Yet we need not fear that the young man will cease to put on an uncomfortable collar, hitch up the buggy and go to see the one whom he is pleased to call his best girl. He is the member of an institution, older than the hills, that no invention of man can displace or cause to wane for a moment. Nor will the sight of his buggy coming down the dusty road cease to interest the best girl though but half an hour before she had conversed with him at the telephone.

Canvassing for Foreign Business in New York.

The New York (Bell) Telephone Co. is canvassing for business in the Italian, Hungarian and Yiddish quarters in New York City by postal cards printed in these three languages.

A Tribute to Ralph W. Pope.

The services rendered by Ralph W. Pope to the American Institute of Engineers during many years of faithful and appreciated work as secretary, are recorded in a tribute written by J. J. Carty, George A. Hamilton, and David B. Rushmore, and printed in the August *Proceedings*. It says, in part:

"For more than twenty-six years Mr. Ralph Wainwright Pope has faithfully and loyally served the American Institute of Electrical Engineers as secretary and for the twenty-seventh consecutive year he has again been elected to the office of secretary. The board of directors and the membership at large are of the opinion that by his continuous and honorable service he has attained such a position in the regard and affections of the members of the Institute that he is entitled to some relief from the active executive duties of his arduous position. Therefore, to carry out his own expressed wishes his resignation as secretary has been accepted. In accepting his resignation, the board of directors, in order to give expression to their own feeling of gratitude as well as the feeling of the membership at large, and in order to reward such long and distinguished service, has appointed him to the position of honorary secretary, in which capacity the Institute may still have the benefit of his long experience in its affairs."

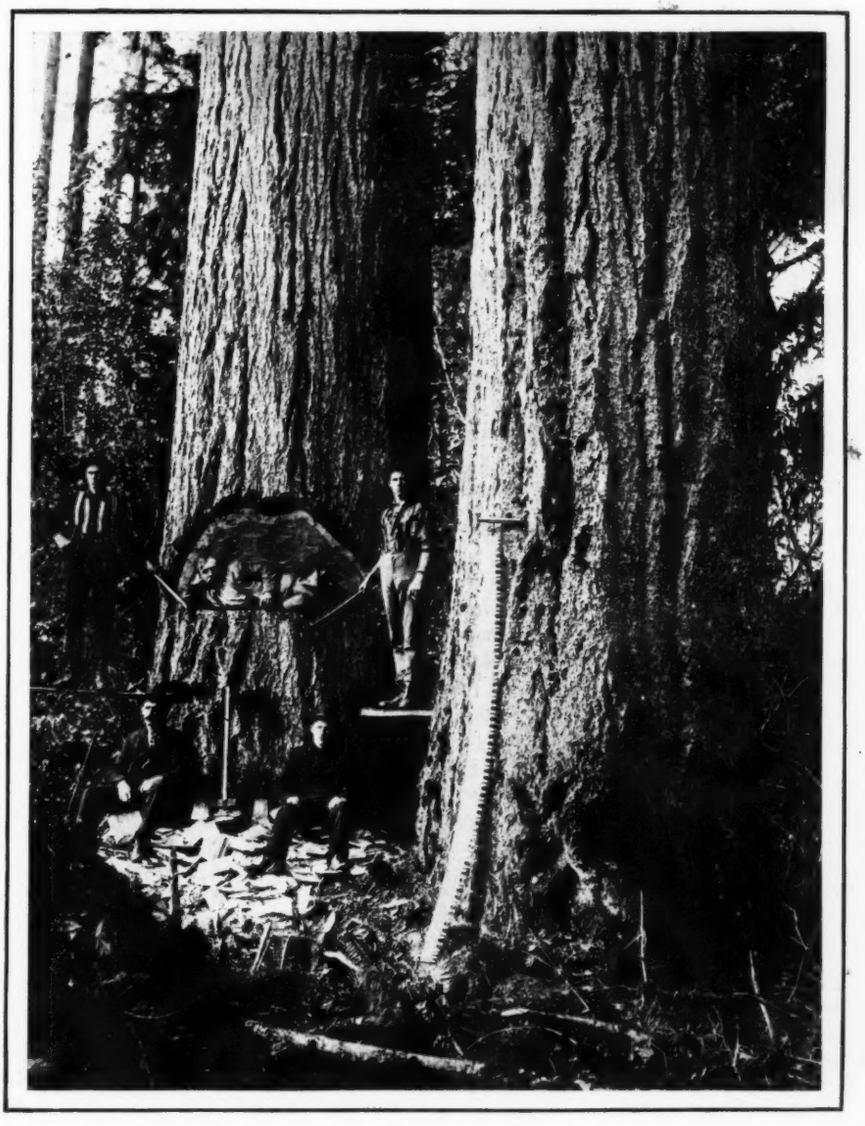
Some Differences Between Washington and Oregon Fir

Washington Fir Distinguished by Close Grain and Large Number of Rings to Inch, as Compared with Oregon Fir, also Known as Oregon Pine and Red Fir, a Quality Which is Declared to Give Longer Life to Cross Arms—Washington's Tremendous Trees

By A. F. Crosby*

The use of Pacific Coast fir as a material for the manufacture of cross-arms is a comparatively recent practice. Yet, since the time the first fir cross-arms were used, about 1888, the material has shown itself so eminently fitted for cross-arm purposes, in its lightness, great strength and, especially, its long life on the pole, that, in the year 1910, more than 60 per cent. of all the cross-arms used were made from fir, and most of the large users are now specifying on their requisitions that nothing else shall be used. The fact that for use in the Central and Eastern states, and especially in the Atlantic and Gulf states, these arms have to be shipped from a great distance, and thereby accumulate large freight expense, makes their initial cost somewhat higher than that of cross-arms manufactured from material of local growth, but the extreme durability of the fir arm in service, probably 30 years or more, makes its use a matter of the best economy. The knowledge of fir has been a matter of constant and rapid growth in the last few years, and until quite recently it was generally accepted that the term "Douglas Fir" covered all the material known as "Yellow Fir," "Red Fir," "Western Fir," "Washington Fir," "Oregon Fir," "Oregon Pine," "Puget Sound Fir," "Northwest Fir" and "West Coast Fir," and that these materials were all one and the same thing, and consequently that any one of the names could be used in making up specifications. Indeed, some of the specifications of the largest users of cross-arms distinctly stated that "the term Douglas Fir is used to cover the *timber known likewise* as Yellow Fir, Red Fir, etc." This was quite possibly due to the lack of thorough knowledge on the subject on the part of the lumber mills themselves. Recently, however, it has become known that a very marked difference exists between the product of the forests in Washington and northern territory and that of the Oregon and southern forests.

The Oregon Fir, also called Oregon Pine and Red Fir, is of loose fibre, and coarse grained, the grain running from four to eight rings to the inch. The Washington Fir is exceedingly close grained, running from twelve to seventeen or eighteen rings to the inch. The closer the grain of the wood, the less natural sap is contained therein, and the less liable the moisture of the atmosphere is to enter, either condition being conducive to rot and deterioration. This means that, while the Washington fir has been conclusively proved to be the very best material known for the manufacture of cross-arms, the Oregon, or red, fir is not fitted for that purpose, as it is relatively short lived on the pole.



A Giant Fir, a Type of Those Growing in the Washington Forests.

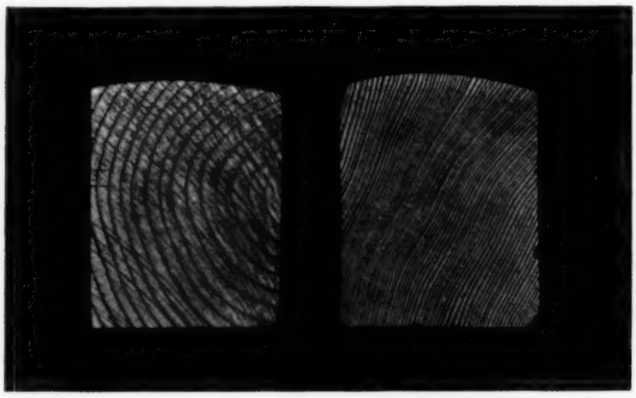
The illustration shown on the following page, which is taken from photographs of cross-sections cut from cross-arms of Washington fir and Oregon fir, shows clearly the very vital difference in the grain and fibre of the two products. It is quite possible that the reason for this marked difference is not that the products of the two regions are of botanically different species; in fact, the contrary is probably the case. It is, however, the fact that the trees cut in the Oregon region are generally young and of small size, while those cut in Washington, especially by the mills along the South Bend branch of the Northern Pacific Railway are giants, many of them being from 350 to 400 feet in height, and from five to fourteen feet in diameter. This also accounts for the fact that the Washington fir is generally "clear," free from large or unsound knots, while the Oregon fir, or pine, is younger and

*Mr. Crosby is sales manager of the American Cross Arms Co., of Chicago.

smaller and runs to knots. This knotty condition tends to lessen the strength and is another argument against the use of Oregon material for cross-arms.

The other photograph gives some idea of the size of the trees cut in the Washington forests. These giants, hundreds of years old, are entirely yellow fir, and free from the defects found in the younger trees cut further south.

The United States Forest Service, at Portland, has said re-



Oregon Fir. Washington Fir.

cently, bearing on this question, that the red and yellow fir of Oregon and Washington are the same tree species and that both kinds are found in the same tree; that red fir is the more rapid growth and is not as free from knots as yellow; that all the second growth timber in that locality is red fir because the trees are still young and have not commenced to form yellow fir.

Quick Restoration of Service After Fire in Manitoba—Exchange Working in Forty-Eight Hours.

The telephone inspector, who had rooms above the telephone office at Shoal Lake, Man., sat talking with some friends, about 11:50 on Saturday night, June 24, when suddenly their attention was drawn to a strong smell of smoke, then two muffled explosions. They rushed downstairs to the operating room and found the place full of smoke and chemical fumes, making it impossible to breathe in the atmosphere. The young lady night operator was standing in a stupor facing the switchboard, with her head receiver and transmitter in position, and immediately upon being removed from the building, fainted. The alarm was given but despite the heroic efforts of the firemen they could not save the building.

Shoal Lake is a town of 500 inhabitants, situated on the Yorkton branch of the C. P. R., 170 miles west of Winnipeg. The telephone exchange consisted of two 100-line switchboards, distributing rack, calculagraph, and other equipment, making up an exchange of 98 local and 76 rural lines with seven toll lines.

The office was in a concrete building, part of which was occupied by a drug store, in the rear of which the fire occurred. Everything was lost with the exception of some of the records. Two cable terminal poles were burnt to the ground, letting down fifteen stretches of cable in five different directions.

As soon as he was able the inspector obtained a subscriber's instrument and connected it to a toll line, and called his plant chief at Neepawa, 54 miles east of Shoal Lake, who in turn notified the division plant superintendent at Winnipeg, and the commercial and traffic departments. The next train from the east scheduled to stop at Shoal Lake, was Monday at 3:00 p. m., there being but two trains a day going through this town, one a daily through train which does not stop and the other a week day local. As the through train left Winnipeg at 10:15 p. m. Sunday night, arrangements were made on Sunday morning with the railway company to stop this train at Shoal Lake, also with the express company to take the necessary shipment of supplies, equipment and material, approximating 5,000 lbs.

The plant officials at Winnipeg hustled all morning preparing their plans and requisitions on the stores. The general storekeeper and supply agent rushed a motor car around town, picking up the necessary packers and shippers, who worked at top speed all Sunday afternoon. Special rigs had to be engaged to take the shipment to the station, as the express company only accepted it on condition it be loaded on board the car. By 7:00 p. m. the entire shipment was loaded and in readiness for the run to Shoal Lake.

Division Commercial Superintendent Innes, Division Plant Superintendent Galliford, with his right hand men, Mock and Ramshaw, boarded the same train. A construction gang was brought in fifteen miles to the town of Minnedosa to catch the same train en route, and hurried arrangements made for cablemen and kit to reach Shoal Lake on Monday morning from a point a few miles west of the fire. Some time after the train left Winnipeg, a terrific thunderstorm broke over the country, the rain coming down in torrents, such as the country has seldom seen.

When the train pulled into Shoal Lake at 4:37 a. m. the morning had broken dull and bleak, more like November than June weather. The men hustled out of the warm cars with a yell, and started immediately to clear away the debris, and prepare for a new exchange and restore the service.

The hotel proprietor got his cook up at 5:15, and had breakfast for the men by 6:00 a. m. Shortly after, while anxiously waiting for the cablemen from the west, word was received that the express which had brought the men to Shoal Lake had jumped the track, 19 miles west, blocking the road. The only other alternative was to have the cablemen drive 20 miles with their kits, but as the roads, owing to the storm of the night before, were in such bad condition, considerable effort was required to induce the liveryman to drive the men. A motor car could have been secured for this service, in Shoal Lake, but the condition of the roads precluded its use. Consequently they did not arrive until 2:00 p. m., by which time the men on the ground had succeeded in restoring the entire toll line service, the commercial superintendent having made temporary arrangements for an office in three rooms above the other drug store.

One other drawback was caused by one of the citizens giving permission to install the office in his building, which was well under way when he changed his mind, and refused, making it necessary to undo all that had been done up to that time.

The necessary poles were teamed from the pole yard, peeled, framed and erected. A 300-line rack installed, two sections of switchboard and all the minor equipment to operate the exchange.

Plant Chief Coddington, superintendents, and other officials all worked unceasingly, straight through until 2:00 p. m., then only took a hurried lunch at a near-by restaurant, then on till 10:00 p. m., less than 48 hours after the fire broke out, when the work was completed, and the service restored, to the satisfaction and gratification of the patrons of the system in that locality.

Great credit is due to the untiring efforts of the young lady operators who were ready the moment the first line was connected into service, and assisted the men in every way possible with information regarding the lines and subscribers.

Interesting Talks About the Science of Business Building

A Series of Seven Articles Discussing the Constructive Side of Business—What is Required of the Employer and of the Employe to Make a Business a Success—Conservation of Mental and Bodily Powers—Right Thinking, Right Acting, Right Living and Work.

By A. F. Sheldon

Formulator of Science of Business Building, and Editor of The Business Philosopher

Talk No. 1

By the term "business building" I mean the art of securing permanent and profitable patronage. Right there success in life, commercially, hinges. Think that over well.

For the sake of emphasis, let me state the same truth again this way: Success in life, commercially, hinges on business building, the art of securing permanent and profitable patronage.

It is true of the employer. It is true of the employe. It is true of the professional man. It is true of everyone engaged in useful effort. It is certainly true of those engaged in the telephone business.

Everybody engaged in useful effort is engaged in business—in busy-ness, and his money-making power depends upon his power to secure permanent and profitable patronage.

Make this, then, your mental sun-glass, with which to focus things; make this the target at which you aim; make this then your daily slogan: "I will develop my art of securing permanent and profitable patronage."

To do this start out by bearing in mind that you are a salesman; realize that you actually have something to sell.

If a bookkeeper or stenographer, you are selling your services; if selling telephone service, you are doubly a salesman. First, you are selling the product of the company you represent, to the buying public. Second, you are selling your own services to the company you represent.

It will be a blessed old day in the world of trade when everybody wakes up to the fact that he is a salesman; and that the price he gets for his goods, even though the goods be service, is potently influenced by one of the same laws that so largely regulate the sale of merchandise; namely, that the price is very largely regulated by the quantity and quality of the goods delivered.

"I'm not paid for doing that," never made good goods in the way of service.

"I'm earning my salary now, and I'll be blessed if I'll do any more," never brought a raise.

The man who is always looking to see how little service he can render, never becomes a master salesman; and that's what every man in the commercial world to-day should strive to be—a master salesman; for a master salesman is a master business-builder, and the master business-builder is the architect of a nation's commercial greatness.

Thus you see that those who dwell on the mental plane of doing as little as they can for their wages forget that the man who never does more than he is paid for, is never paid for more than he does.

Let this thought sink deep into your mind, if you strive for success in the commercial world, the doers are the money-makers—become the captains of industry, the master merchants; but the "shirkers" and the "work-dodgers" are the "down-and-outs," the "might-have-beens" that never were.

We have seen that in final analysis everybody engaged in useful effort is a business-builder. He has a business of his own to build. To do that, he is selling something—service or something else.

This series of articles must be eminently practical from a business point of view. However, in a broader sense, this series of articles should appeal to all workers in the vast field of commerce, or, to change the figure, to those who have set sail upon the sea of commerce, since each one is sailing for, or wants to sail for, the same port—success.

Let us be real plain about it: We all want to achieve financial success. Of course real success includes more than that, but it does include financial success.

As the prime object of human existence is the attainment of content—happiness—in the broad sense of that term, I have but little sympathy with those idealists who say that money has nothing to do with happiness. Personally I do not believe it is possible to be broke and happy at the same time. If you do, you are an exception to the rule.

Of you, then, who are engaged in that particular branch of the world's commercial work known as telephony, I ask these questions:

First, in what direction lies the harbor of financial success?

Second, what power propels your craft?

Third, what are your chart and compass?

Before you answer these somewhat abstruse questions, I want to ask you again, Mr. Employer, this question: What are you in business for?

Of you, Mr. Employe, I would inquire this: What are you working for?

Did I catch your answer correctly, and, written out, does it read, "to make money?"

Let me ask each of you the same question in a little different way: "What is the object of the existence of that commercial institution of which you are a part?

Is your answer the same as before? Did I hear you say, "to make money?"

If I have caught your answer correctly, then I want to say this: You are not headed in the right direction for the harbor of financial success. Your motive power is not good. Your chart and compass are out of order. Your craft will not arrive at the desired destination, unless the chance wind of favorable fortune should drift it there. You will not reach it by that kind of navigation.

Money doesn't "make" itself. It has to be "made." And the necessary ingredients for making money may all be summed up in one word—"service." Service, the open sesame of the gates of success; service, the bugle-call of high endeavor.

It is the most potent word to my mind that man has ever coined—Service. Study what it means, and you will think so, too.

Certain ingredients are cause; the finished product is effect. Service is cause. Money is effect. Mix enough of the right kind of deeds (the things you do), and the right kind of word (the things you say), and you then render great service, and the natural result is more profit to you. The profit you make, is the pay you get for the service you render.

Are you aware of the fact that 95 per cent. of those who set sail on the sea of commerce fail to reach the port of financial success? Startling, but true. Why? There's a reason. There is always a reason why this man wins, and that man fails.

Ask the next one hundred persons you meet the question, "What are you in business for?" You will get the answer, "to make money," from at least 95 per cent. of them. That's the reason for their failure.

When ninety-five out of every one hundred can knowingly and understandingly say, "I am in business, or, I am working to render service," when they can say that honestly, meaning every word of it, then the statistics will be gloriously reversed—95 per cent. will win. For 95 per cent. can win, if they will render the world the service that the world needs.

We must get back to the law of cause and effect in the world of business. Fire is cause; heat is effect. If I want heat, I build a fire. Service is cause; money is effect. If I want the heat of money, the warmth of profit, the enjoyment of more pay, I must build a bigger fire of service.

So must you—you who read this. So must every man who would be a business-builder, and a money-maker. No one can escape the law of cause and effect.

There are thousands of employes ruining their eyesight looking for more pay. They get so close to the log of "more money" that they can't lift it. If they would look for more ways to render greater and better service they would soon make a lever that would lift the log.

There are thousands of corporations (composite salesmen) also which are looking longingly for dividends to increase. They are so close to their business that they can't see it.

Quit worrying about dividends, and become more active in the use of your constructive imagination, figuring out ways and means to solve the problem of rendering more prompt and more efficient service in every way, then the "more dividends" question will take care of itself.

There is one more question I want to ask in this article—but it is a most important one. It is this: Who are the salesmen in the world of commerce?

We have seen that, in the broadest possible sense, everyone is a salesman, but we are narrowing the question right down to commerce in the technical sense of that term, when we ask: Who are the real salesmen of the world?

Think it over and have your answer ready, and I will give you the answer that appeals to me as being the correct one in Talk No. 2, which will appear in a later issue.

Power Switchboard in a Modern Exchange.

The accompanying view shows the big power board in the Independent exchange at Detroit, Mich. The general features of the board, including the panels for controlling the charging and ringing machines, indicating and recording measuring instruments, etc., are fairly clear in the photograph. The holes beneath the meter in the left-hand panel are a part of the ingenious voltmeter switch, for testing individual cells of storage battery, made by the Dean Electric Co.

Physical Connection Ordered by Oklahoma Commission Between Bell and Independent.

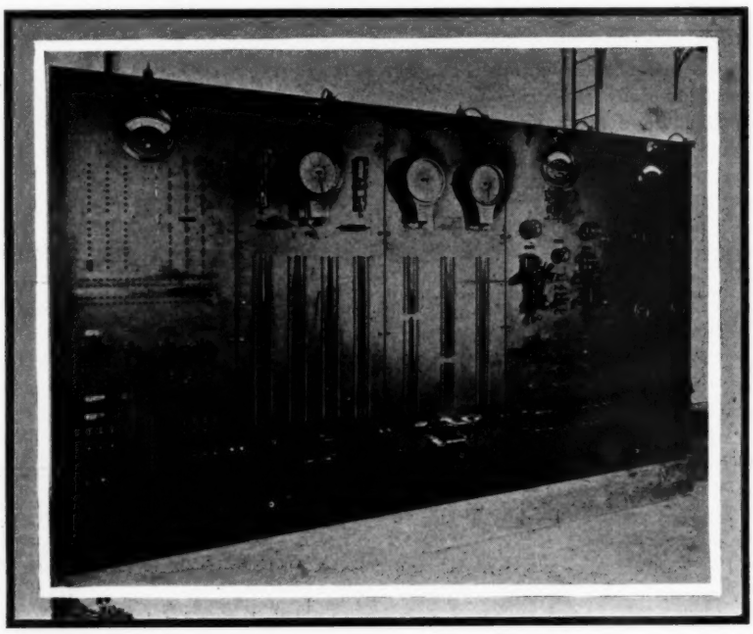
The Corporation Commission of Oklahoma has issued an order in the case of J. B. Dinwiddie vs. Braman Mutual Telephone Co. and Pioneer Telephone Co., requiring the two companies to make physical connections, and that Dinwiddie be given the same rate as any other subscriber of the Braman company. The difficulty arose over that fact that Dinwiddie, while living within the town of Braman, was a subscriber on the rural line, and claimed all of the privileges of that line, to which the Pioneer objected when it came to the question of making connections with the Braman line.

The commission states in its opinion that it does not look with favor on the extension of rural service to subscribers in town where there is an exchange which makes the switching of rural lines merely an incident of its business. It holds, however, that the Braman exchange is merely a co-operative arrangement between the rural lines and that such a rule will therefore not apply.

Independent Long Distance Service Far Superior in Northwest to that of Bell.

One of TELEPHONY'S friends, located in an Oregon city, about 30 miles from Portland, tells how great an advantage the Independent companies have in the character of service they are giving. The Independents have the advantage both in speed and quality of transmission. He says:

"About 90 per cent. of our calls are to Portland, where there is an automatic plant, and we have a calling dial on our board. Given the telephone number and clear line, we select and ring a telephone in Portland in about 5 seconds on an average. But the Bell has been here for many years and reaches many more telephones than the Independents over long distance. There is no competition to places the Bell company reaches exclusively and *very little* where we do reach; the Bell isn't in it for service! Near by we reach 1,500 telephones; in the same territory the Bell has 15, including all toll stations and this town."



Power Board in Michigan Home Exchange, Detroit.

Telephone Papers at Turin Electrical Congress.

At the International Congress of the Applications of Electricity to be held at Turin, Italy, from September 10 to 17, 1911, the following papers relating to telegraphy and telephony will be presented:

"Long-distance Wire Telephony," F. B. Jewett, United States.

"Wireless Telephony," Valdemar Poulsen, Denmark.

"Automatic Telephone Exchanges as a Means of Economy and Improvement in Telephonic Communication in Large Cities," H. Milon, France.

"Research on Secrecy in Wireless Telegraphy," P. O. Pedersen, Denmark.

Steel Rail Blown Through Telephone Lead.

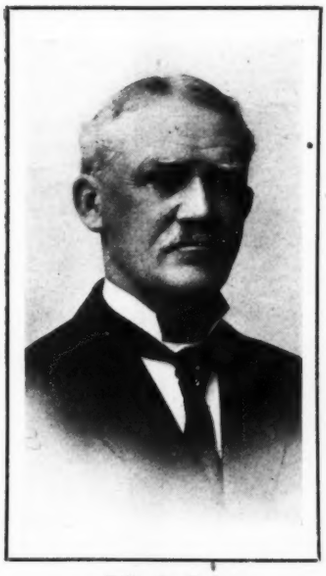
Los Angeles telephone men, on arrival at the scene of a recent trouble, found that a steel rail had been blown through a lead by an explosion which followed the collision of a handcar loaded with dynamite and a fast moving freight train, says *The Pacific Telephone Magazine.*

Some Recollections of a Pioneer Telephone Exchange

Death of One of Oldest Telephone Exchange Operators in Country Recalls Details of New Haven and Meriden Exchanges, Earliest Commercial Telephone Plants in the World—Minneapolis Man Furnishes Interesting Illustrations and Data

By E. L. Held

The death of Fred A. Allen, night chief operator for the Southern New England & Telegraph Co. at New Haven, Conn., recalls to the minds of "old timers" in the telephone business, the installation of the first telephone exchange in this country, used for commercial purposes. Mr. Allen was 52 years old, and was, at the time of his death, perhaps, the oldest telephone operator working on an exchange. He was one of the first operators of the New Haven, Conn., exchange, which was opened in 1878. A few days after this the Meriden system, was installed.



Ellis B. Baker.

Through the courtesy of Ellis B. Baker, now general manager of the Minnesota Central Telephone Co., at Minneapolis, it is possible to present to TELEPHONY's readers, photographs of the equipment employed at Meriden.

The switchboard used, which is illustrated herewith, is, it is claimed, the oldest now in existence. It is in the possession of the New Haven County Historical Society for preservation.

The system was installed in Meriden by Mr. Baker a few days after the opening of the New Haven exchange by G. W. Coy and Herrick P. Frost.

The Meriden switchboard was modeled after the one used in New Haven, but in taking down the New Haven board, it was necessary to dismantle it because of the method of mounting.

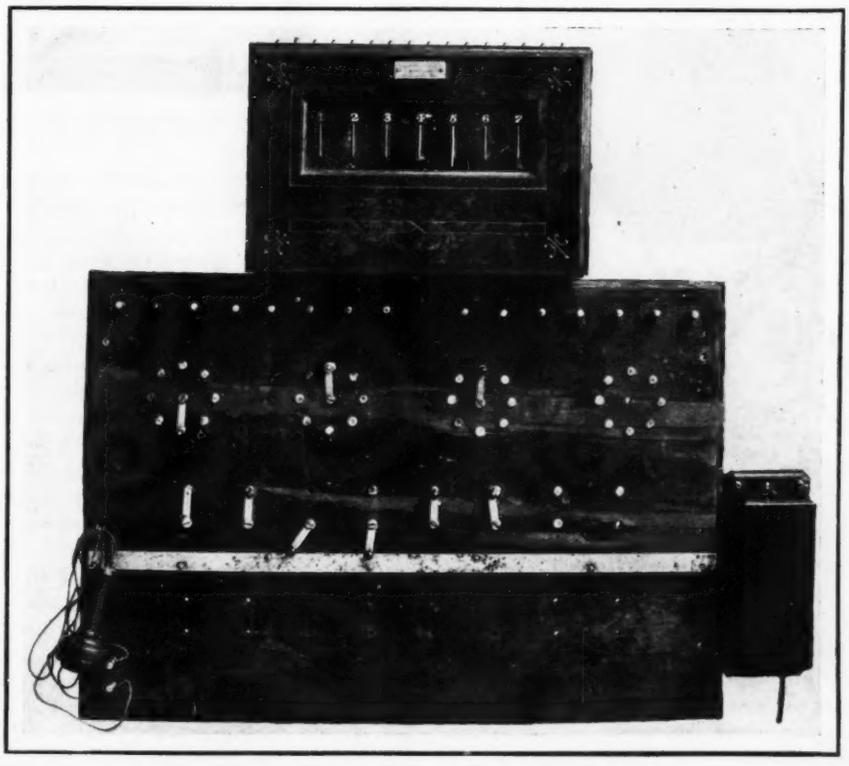
The boards were made by Rodger D. Blish in the factory of the Edward Miller Co. The metal discs were merely heads of carriage bolts, and teapot handles were used as switch-lever handles. The discs were connected in pairs, so when two lines were connected, an operator's set could be cut in on the circuit. When conversation was finished, the operator would throw off the two switch arms from the discs, and move the arm to connect the circuit to ground through the batteries and relays.

The board was equipped with seven circuits, and from ten to fifteen subscribers were connected to each. A charge of $18 per year was made for this service.

The construction of the exchange, both outside and inside, was necessarily of the cheapest order. Galvanized iron wire, which constituted the grounded circuits, was run on trees and attached to house tops. Poles were used occasionally, but they were very small, both in size and number.

The calling apparatus on the switchboard, known as "Coy's Chicken," was the invention of Thomas A. Watson. It consisted of a large induction coil mounted on a wooden base, and was equipped with a circuit breaker and a flat steel spring. The circuit breaker was operated by hand. It worked the spring, vibrating the diaphragm of the subscriber's telephone, and produced a buzzing sound, which could be plainly heard even at a distance from the instrument.

The telephones, which were made of wood, served both as transmitters and receivers. The set upon which this subscriber's station was mounted consisted of a blackboard 3 x 3½ inches, and the wooden receiver hung upon a hook at the bottom of the board, as shown in the accompanying illustration.



Pioneer Switchboard Used in Meriden in 1878.

To pass a call to central it was necessary to press a button, which opened the line wire, released a drop in the annunciator mounted on the switchboard, and caused an alarm to ring.

The second telephone directory of this system was published in February, 1878, and is here shown. Within a month after the opening of the exchange the number of subscribers had grown from twenty-one to fifty.

This system was used until 1889,

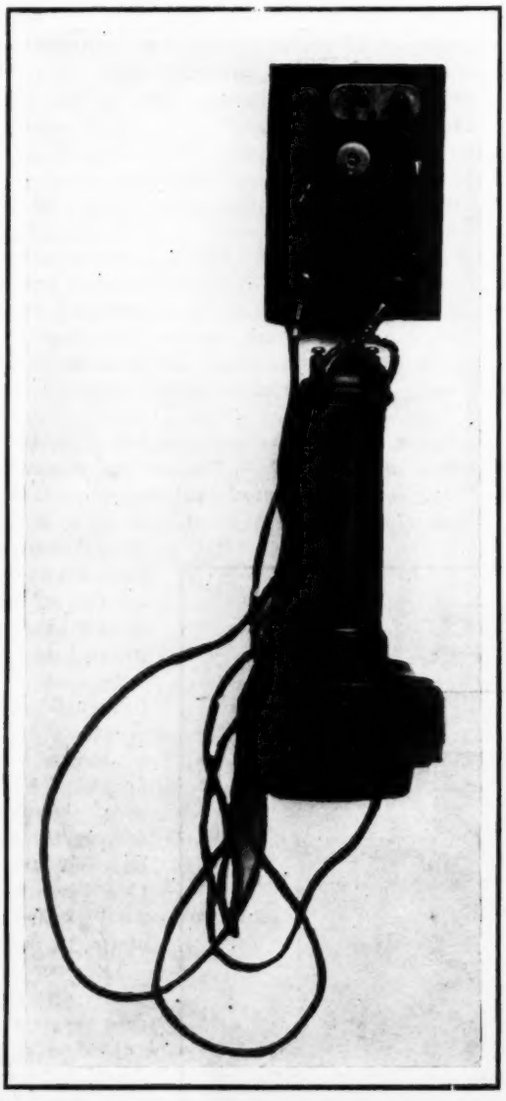
when a new system was installed by the Southern New England company.

Telephone Astounds Oklahoma Choctaw, Freed After Thirty-four Years' Imprisonment.

Joshua Wade, the Choctaw freedman, whose pardon after having been in the Detroit house of correction and the Fort Leavenworth penitentiary since 1877, was issued to him last week, says a dispatch from Oklahoma, was in McAlester today. He called on the attorney who secured his pardon, and while there his attorney had occasion to use the telephone. When the old negro heard the bell ring and saw his attorney speaking into the transmitter, his eyes stuck out in absolute amazement, and he was so terrified that he could not speak himself for some time.

He had never seen a telephone in operation before. He looked upon it as some kind of witchcraft.

He had similar misgivings as to the way the street cars are



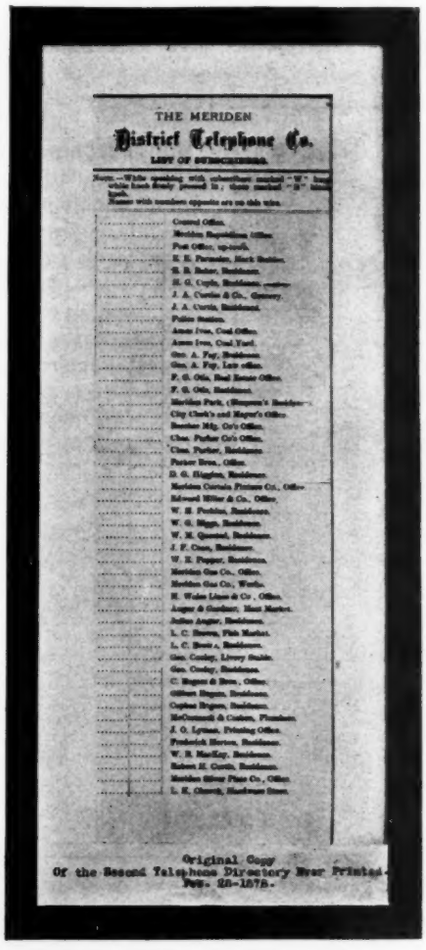
Subscriber's Set Used on Meriden System.

propelled. In fact, every time he turned around he saw some new device which is a marvel to him.

He has been buried in the penitentiary for thirty-four years and the world has made marvelous strides in those years, especially in the Indian territory, now Oklahoma, which was a howling wilderness when he was arrested and incarcerated in the federal penitentiary.

Use Model Town to Illustrate Telephone System in Absorption of National by British Post Office.

In connection with the important arbitration which is proceeding at the Law Courts between the National Telephone Co. and the post office, which is to take over the National system. A striking model has been constructed, says the *London Standard*.


THE MERIDEN

District Telephone Co.

LIST OF SUBSCRIBERS.

Original Copy
Of the Second Telephone Directory Ever Printed.
Nov. 25-1878.

Second Meriden Directory.

A railway runs through the center of the model and above and beneath it are the different systems of crossing —open wires, covered wires, conduits and cables. Exchanges are introduced showing the different methods of running wires to private houses and connecting the several exchanges. There are about one hundred houses in the model, all being constructed of fine wood. The poles are of boxwood, the wires of copper-colored silk and the cables of copper wire tinned over to represent lead.

The model is colored to represent a town with surrounding country, and it has been provided by the National Telephone Co., with the object of enabling the commissioners and counsel to grasp in a moment any particular point with regard to wiring which may arise.

$2,500 for Injury to Bystander.

While repairing their lines in Davis Avenue the Columbus Citizens' Telephone Co. of Columbus, Ohio, took down some poles. During the process a pole fell from the props of the workmen and crushed the foot of John B. Hunter, a boy who was watching the work. The lower courts gave him $2,500 damages. The telephone company prosecuted the case to the supreme court on several technical points of law, only to have that tribunal affirm the lower courts.

The Commercial Loading of Telephone Circuits*

Reduction of Terminal Loads by Special Transformers—Use of Heavy Gauge Loaded Conductors—Efficiency of Boston-Philadelphia Cable Circuit—Reason for Increased Size of Aerial Loading Coil—Effect of Insulation Upon Transmission Over Loaded Lines

By Bancroft Gherardi

I have been speaking of the terminal losses observed in connection with loading as though they pertained particularly to the loaded line. It has been convenient to so speak of them but, of course, they actually pertain to the combination of loaded lines with unloaded lines or standard substation equipment, and properly are no more associated with one than with the other but rather result from a combination of the two. As, however, the substation instrument and the unloaded lines were in service for a considerable time before the use of loaded lines, it has been convenient to associate these reflection losses with the loaded lines and consider the electrical efficiencies of the unloaded lines and the substation instruments to remain unchanged.

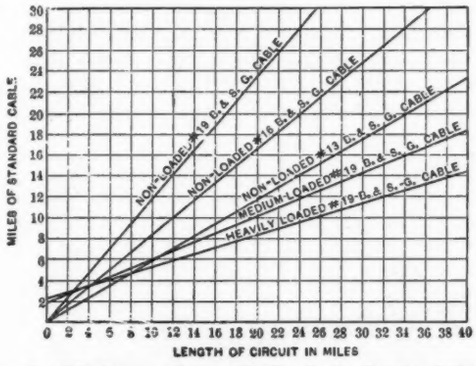

MILES OF STANDARD CABLE
LENGTH OF CIRCUIT IN MILES
NON-LOADED #19 B. & S. G. CABLE
NON-LOADED #18 B. & S. G. CABLE
NON-LOADED #13 B. & S. G. CABLE
MEDIUM-LOADED #19 B. & S. G. CABLE
HEAVILY LOADED #19 B. & S. G. CABLE

Fig. 5.—Efficiency of No. 19 B. & S. Gauge Cable.

Various devices have been successfully employed to reduce terminal losses, although no plan has been worked out which would completely eliminate them. The plan used most successfully to-day for eliminating terminal losses is a device known as a terminal transformer. This is a transformer or repeating coil which differs from the standard telephone repeating coil in that there are more turns on one winding than on the other. It is used in the same way as an ordinary transformer in electric light practice, the high potential side being connected with the loaded line and the low potential side with the unloaded line. For ordinary conditions of loading the ratio of the two windings is usually either 1 to 1.4 or 1 to 2. The effect of the terminal transformer in reducing terminal losses is well shown in Fig. 4. The terminal loss for the two ends of a medium loaded line without terminal transformers is about 5.75 miles of standard cable. With terminal transformers this is reduced to 2.5 miles. These figures are for cases where the telephone substation apparatus is located directly at the ends of the loaded line. Where, between the loaded line and the substation apparatus, there is a length of unloaded line it is found that terminal losses are not so great as if the terminal apparatus were directly at the ends of the loaded line. The extent to which the varying amounts of unloaded line reduce terminal losses are shown by the following figures:

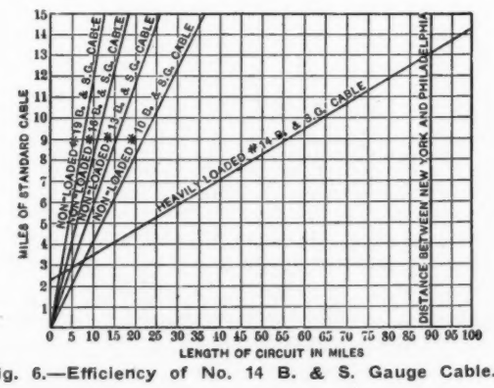

MILES OF STANDARD CABLE
LENGTH OF CIRCUIT IN MILES
NON-LOADED #19 B. & S. G. CABLE
NON-LOADED #16 B. & S. G. CABLE
NON-LOADED #14 B. & S. G. CABLE
NON-LOADED #13 B. & S. G. CABLE
NON-LOADED #16 B. & S. G. CABLE
HEAVILY LOADED #14 B. & S. G. CABLE
DISTANCE BETWEEN NEW YORK AND PHILADELPHIA

Fig. 6.—Efficiency of No. 14 B. & S. Gauge Cable.

Amount of 19 gauge unloaded cable at each end of loaded circuit.	Amount of terminal losses at both ends of a loaded circuit—medium loaded. Without terminal transformers.	With terminal transformers.
None	5.75	2.5
1 mile	4.0	2.0
2 miles	3.0	1.50
3 miles	2.2	1.15
4 miles	1.6	1.0
5 miles	1.25	0.9

While terminal losses are substantially independent of the length of the loaded line, they are affected by the character of the loading of the line. The heavier the loading the greater the reflection losses. While with medium loading the reflection losses, as shown by the above table, with no unloaded cable at the ends of the circuit are 5.75 miles without terminal transformers and 2.5 miles with terminal transformers, the corresponding figures for heavy loading are 7.8 miles and 3.5 miles. These figures are, of course, reduced as in the case of medium loading, by having unloaded cable at the ends of the loaded circuit.

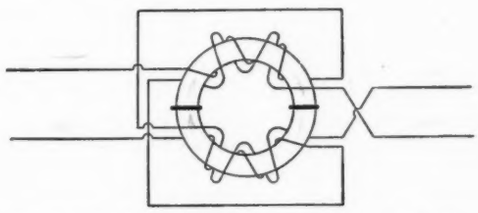


Fig. 7.—Loading Coil Winding for Sides of Phantom.

If it were not for these terminal losses it would be practicable, theoretically at any rate, to indefinitely increase the efficiency of a 19 gauge circuit by adding more and more inductance to it. Even without terminal losses, however, this could not practically be done, because more and more loading coils would have to be added as more inductance was added, and these would in turn bring in larger and larger losses until finally the further gains from adding inductance would be offset or more than offset by coil losses. The increasing effect of leakage as the weight of loading is increased also has a limiting effect. Aside from these effects, terminal losses, which increase as the amount of inductance added to the circuit is increased, places a limitation beyond which it is not advantageous to increase the amount of loading on the circuits. This is illustrated by Fig. 5, which gives the efficiency of medium and heavily loaded 19 gauge conductors and on which, for the purposes

*Conclusion of paper presented at annual convention of the American Institute of Electrical Engineers.

of comparison, the efficiencies of various gauges of unloaded circuits are also given. It will be seen from this that by taking into account the reflection losses which are here given at about an average for various conditions, the medium loaded circuit is more efficient than the heavily loaded circuit in lengths up to four miles. Beyond that point the heavily loaded circuit is more efficient, although even at 12 miles the difference is not largely in favor of the heavy loading.

It is interesting to consider from this diagram what results have been obtained from loading 19 gauge conductors. For a length of circuit equal to 4.5 miles the 19 gauge conductor with medium loading is as good as a 16 gauge conductor unloaded; that is to say, loading has made the circuit containing half the copper as good as the larger circuit without loading. For a length of 11 miles a loaded 19 is as good as unloaded 13 weighing four times as much as the 19 gauge conductor.

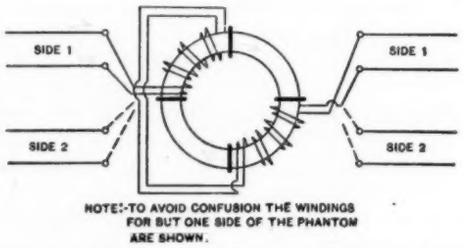


Fig. 8.—Loading Coil Winding for Phantom Circuits.

For underground circuits, requiring a greater transmission efficiency than can be obtained by the use of heavily loaded 19 gauge cable circuits, it has been found best, all things considered, to employ a larger gauge of wire rather than to load more heavily. Many cables containing 16, 14 and 13 B. & S. gauge conductors have been laid and loaded.

The most interesting existing cable containing large gauge conductors is the New York-Philadelphia cable which was laid several years ago between these two points in order to provide additional circuits and to insure the service against storm damage. Most of the circuits in this cable are of 14 B. & S. gauge and they are heavily loaded. That is, there is 0.2 henry per mile added to the cable circuits by means of loading coils. The results obtained on these

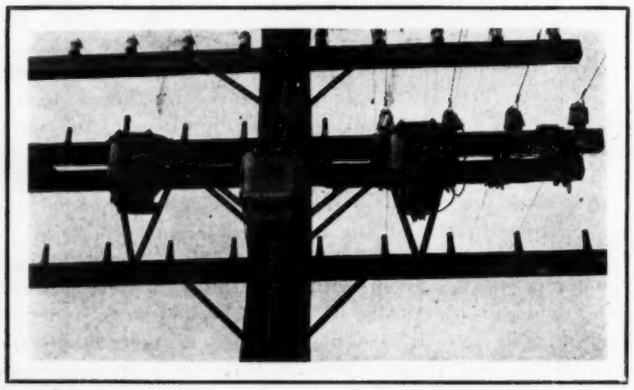


Fig. 9.—Loading Coils Placed on an Open Wire Line.

circuits are given in Fig. 6 assuming average terminal conditions. The results obtained by this loading are most satisfactory. The distance between New York and Philadelphia, following the route of the cable, is 90 miles and this distance is indicated on the diagram. It will be seen that for this distance the circuits have an efficiency of 13 miles of standard cable If unloaded, these circuits would have an efficiency of about 60 miles of standard cable. Over such circuits no commercial service could be given between New York and Philadelphia. Without loading, even 10 gauge conductors would have given unsatisfactory results, so that by means of loading we have been able to obtain results between New York and Philadelphia over 14 gauge conductors that could not have been obtained with conductors of much greater weight without loading.

While this New York-Philadelphia cable represents the longest loaded underground cable to-day in use anywhere in the world, a project has been approved and is now under way which will far surpass it. This project is for an underground cable extending between New York and Washington in one direction and New York and Boston in the other. The largest conductors in this cable will be No. 10 B. & S. gauge and by means of loading we confidently expect that we will be able to obtain thoroughly satisfactory results between New York and either Boston or Washington, and that it will even be possible to obtain service through this cable between Washington and Boston should storm damage to the open wire lines render this necessary. The loading of this cable will be of particular interest as it will represent the first large application of the phantom-

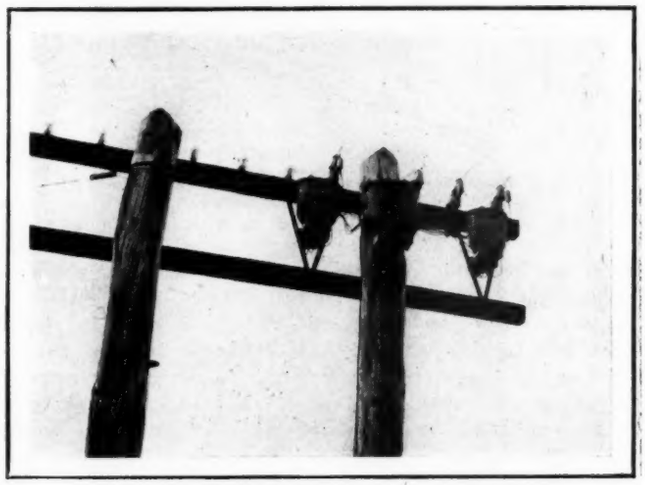


Fig. 10.—Loading Coils on Open Wire on "H" Fixtures.

ing of loaded cable circuits and the loading of phantom cable circuits. In order to accomplish these results it is necessary to adopt special arrangements of the windings of the loading coils. The windings on the loading coil used for loading the side circuits are arranged as shown in Fig. 7. With this arrangement of winding, the effect of the telephone current in the side circuit, which current flows in opposite directions in the two sides of the circuit, is to magnetize the core of the loading coil in the same direction throughout and to produce no consequent poles. The loading coil thus acts, in as far as the side circuit is concerned, exactly like the loading coil with the simple winding shown in Figs. 1 and 2. In building up a phantom circuit this side circuit, however, becomes one side of the phantom, and the telephone current in the phantom circuit traverses the two wires of the side circuit in parallel. Such a current flowing through the windings of such loading coils as are shown in Figs. 1 and 2 would magnetize the two sides of the core in opposite directions and produce consequent poles at the two sides of the core. This would not only bring in serious losses, but also crosstalk which would be very difficult to deal with. The current in the phantom circuit flowing through a coil with windings on it as shown in Fig. 7 does not magnetize the loading coil at all, as each winding is neutralized by a corresponding winding on the

other side of the line. Such coils may be used to effectively load the side circuits of a phantom combination and, in as far as the phantom itself is concerned, they act only as resistance which is very small in amount. This, however, does not load the phantom circuit, which of course is a desirable result to attain. To load the phantom circuit a coil with windings as shown in Fig. 8 is employed. It will be seen by tracing out the winding of this coil that to the current flowing in the phantom circuit it acts like an ordinary loading coil, that is, all windings magnetize the core in the same direction. To currents flowing in either of the side circuits, however, it acts only as dead resistance. The arrangements described above in connection with the application of loading coils to phantom circuits and to the side circuits of phantom circuits have been successfully applied to open wire lines as well as to underground cables.

Loading Open Wire Lines.

Gratifying as have been the results obtained from the use of loading on underground cables, its application to open wire circuits has also resulted in most noteworthy improvements in their efficiency. The general plan of loading open wire circuits is similar to that used on underground cable wires. On account of the differences in the electrical characteristics of open wire circuits, as compared with cable circuits, however, the design and spacing of the loading coils is materially different from the coils and the spacings used on underground cables. In general, only heavy loading is used on open wire lines on account of the greater length of these lines. The coils themselves are substantially larger than those employed on cable circuits for two reasons—in the first place the coil is subject to damage by lightning. In order to minimize this difficulty the coils must be built to have high breakdown strengths against lightning discharges. All aerial coils are built so that they will stand a breakdown test of 8,000 volts. This, of course, considerably increases the size of the coil. The coil is further increased in size by the fact that, as an aerial circuit is initially a good deal more efficient than an underground circuit, it is necessary more efficient than an underground circuit, it is necessary that the coils used in loading it should have smaller losses than are permissible in underground cable loading coils. The outside diameter of the aerial loading coil is about 10 inches and the resistance of the two windings of the coil to direct current is 2.5 ohms while to alternating currents of a frequency of 800 periods a second it is 6.5 ohms. In addition to building the coil so that it has a breakdown strength of 8,000 volts, each coil is protected by a pair of lightning arresters adjusted to operate at 3,500 volts. These precautions have proved sufficient to reduce trouble from lightning on aerial loading coils to a negligible amount.

Low insulation which is sometimes encountered on open wire lines, particularly in periods of bad weather, proved at the start a serious difficulty in connection with the loading of open wire lines. This, however, has been overcome by removing the worst causes of low insulation and in some cases by the use of improved insulators, and at the present time low insulation is not proving a serious factor in connection with the application of loading to overhead lines. In wet weather the transmission efficiency of overhead lines is not quite as good as in dry weather, but it may be stated that it is very seldom that the loaded circuits fall in efficiency sufficiently to seriously affect the transmission, except in cases where the lines are in actual trouble from branches of trees falling into the line or other similar causes.

In connection with the loading of open wire lines the problem of arranging them so that they will be free from substantial cross-talk has required attention. Due to the fact that much of the cross-talk disturbance in telephony is from electrostatic induction it is to be expected and it is found in practice that the loading of a circuit increases its tendency to cross-talk. In the early application of loading to open wire lines some trouble was experienced from cross-talk and special transposition systems were devised to overcome these difficulties and it was further found necessary to locate the loading coils with special reference to the transpositions. On underground cables it has been found that loading also increases the cross-talk somewhat, and in these we arrange to reduce the capacity unbalances in order to reduce cross-talk to a sufficiently low point.

The loading coils for use on open wire circuits are placed in individual cast iron cases and these are placed on the poles or crossarms, as in Figs. 9 and 10, which show illustrations of two common arrangements. The line is carried to the loading coil by means of bridle wire. The lightning arrester is placed in a separate case and bridle wire is also extended to it.

The results obtained by the use of loading coils on the No. 8 B. W. and No. 12 N. B. S. gauge wires, which are the standard sizes used in the long distance plant of the Bell system, are shown in Fig. 11, in which the purposes of comparison the efficiencies of the unloaded circuits are also given. This diagram shows terminal losses with the conditions which may be considered as average. The general

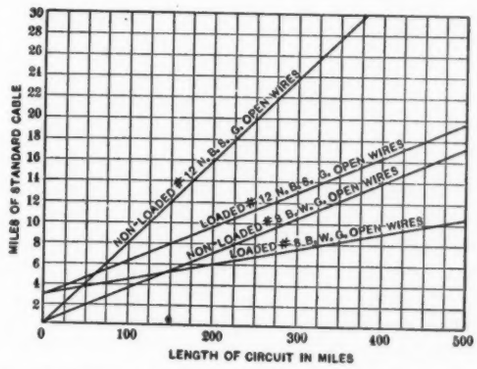


Fig. 11.—Efficiency of No. 8 B. W. G. and No. 12 N. B. S. G.

reflection loss problem with overhead lines is the same as with underground cables, and having been discussed in detail in connection with such circuits it need not be repeated here. As will be seen from Fig. 11 the results obtained from loading open wire lines have been to more than double their transmission efficiency when used in considerable lengths.

One of the very valuable results which has followed from the loading of open wire lines has been that it has made a very substantial extension to the distance over which long distance service can be given. Up to the time that loading was successfully applied to No. 8 B. W. G. wires, about 1,000 miles represented the greatest distances over which commercial service was maintained. By the loading of No. 8 circuits this has just been extended to 2,000 miles, so that to-day it is practicable to obtain a successful telephone conversation from New York to Denver. The actual distance between these two points by the route which the line follows is 2,010 miles.

A very important use has been made of loaded cables in bringing loaded open wire lines into large cities. Loaded cables have also been used to bring unloaded open wire lines into thickly settled communities, but in this case the gains have not been so great because it is not practicable to place terminal transformers for reducing the reflection losses between the outer end of the underground cable circuits and the aerial lines, and hence reflection losses are experienced.

This practical impossibility of placing reflection reducing devices between open wire and cable has also made it

impossible to obtain the full benefits from loading in those cases where short stretches of cable are placed in the middle of toll lines—*e.g.*, in communities where the appearance of the open wires is objected to and requests are made to place them underground. If the open wires are loaded the trouble is not so great, as a comparatively heavy loading can be used without excessive reflection losses. For non-loaded open wires, the loading of the cable if attempted at all must be very light if the reflection losses are not to offset any gain from the reduced attenuation.

For these reasons and also because cable circuits loaded or non-loaded are inherently less efficient than open wire circuits it is important that every effort be made to keep toll lines as free as possible from cable.

LOADING OF SUBMARINE CABLES.

The problem of loading submarine cables is a mechanical one rather than one concerning the principles of loading. In this country a 16 B. & S. G. dry core paper submarine cable about 5 miles long and containing loading coils spaced about 2 miles apart has been successfully laid across the Chesapeake Bay and is now in operation. There has also been talk of laying a dry core loaded submarine cable across Puget Sound for a distance of 16 miles. The situation in the United States, however, is not such that large numbers of loaded submarine cables of any great length are required. Abroad, however, particularly between England and the Continent and between England and Ireland, submarine cables of considerable length are needed for telephone purposes and in these situations loaded gutta-percha submarine cables have been employed with successful results.

EXTENT OF APPLICATION OF LOADING.

It is evident that a device making such great improvements in the transmission efficiency of telephone circuits as does loading would have a large place in the plant of any company providing a comprehensive system of telephone service over a large area, a condition necessarily requiring long cables and long open wire lines. Although the loading art was born in 1900, and its successful commercial application on an extensive scale to our plant dates only from about 1903, there are already in the United States over 85,000 miles of loaded open wire circuits and over 170,000 miles of loaded underground cable circuits. To load these circuits there have been employed about 125,000 loading coils. The day-by-day experience with this enormous loaded line plant has fully demonstrated that we are in practice obtaining the successful results which the engineering data that I have set forth would lead us to expect.

The facts which have been herewith developed have, I think, been more than sufficient to justify the statement at the beginning of an important era in telephone work. I do the loading patents were issued to Professor Pupin, marked the beginning of an important era in telephone work. I do not know of any problem in electrical science and electrical engineering which has required greater skill, technical ability and diligence on the part of those engaged in its solution—inventors, engineers, manufacturers and construction people—than has the working out and the application of loading, and it is a pleasure to be able to present to you a statement of the results which they have accomplished.

Independent Telephone Company of St. Joseph Bidding for Long Distance Business.

A letter sent out recently by the St. Joseph Home Long Distance Telephone Co. reads as follows:

"We wish to call your attention to this company's long distance facilities. We are in a position to furnish you with first-class long distance service. Since the organization of this company, it has spent nearly a million dollars in the territory tributary to St. Joseph, in building first-class toll lines. We are at the present time handling the majority of the largest toll users in this city, and this alone is proof that our service is more satisfactory than any other service.

"This company employs experts in its service department, who devote their time to the interests of our long distance lines; thus assuring prompt and efficient service. Give us a trial and be convinced."

Further Details of the Employment of the Telephone in Warfare, as Seen by "Collier's."

A short time ago TELEPHONY recounted some of the uses to which the telephone had been put during the warfare in Mexico. *Collier's* editor sets forth others, which are rather interesting and certainly novel, as follows:

"The Japanese in their advance toward Mukden used field telephones with brilliant effectiveness. An equipment, consisting of the necessary instruments and big reels of wire something like hose carts, is now carried in the American army, so that there can always be direct communication in the field. Obviously, in modern battles where the range of the fire is so great and the commanding officer plans the battle as he would play chess, this idea is of enormous aid.

"In Mexico a unique feature has been added to the rôle of this instrument in that the opposing generals were connected by telephone. They were furnished with service through an exchange of five thousand subscribers during the course of the battle at Juarez, Madero and Navarro signing contracts at the regular rental rate and being listed on the records as regular subscribers. They directed many of the maneuvers by telephone, by recourse to "information," to furnish them the numbers at the various Juarez addresses. The officers were able to submit their reports by telephone during the course of this battle by the simple means of breaking down a door or battering in a window.

"It was toward the close of the battle that General Madero called up his antagonist and demanded the surrender of the town. Again, when Navarro's life was threatened by the excited Revolutionists, Madero used the telephone to give strict orders to protect the opposing general. It was through the telephone, also, that a temporary armistice to take care of the dead and wounded was arranged. The telephone company records show that Madero used the instrument one hundred and sixteen times, to seventy-four for Navarro.

"The instruments in Jaurez were handled for the combatants in the same manner as a private wire, but *Collier's* has no knowledge about what happened when the operator reported 'Busy,' or 'They don't answer.'"

Indiana Local Companies Taxed on Eleven Million Dollars.

The taxation value of the telephone properties operating throughout the state of Indiana for the year 1910, as fixed by the tax commissioners, was $11,146,832. Among the sample figures for small, medium sized, and large companies, showing the values assessed per mile are the following: Beech Grove Farmer's Telephone Co., 3 miles wire, $40 per mile; Carthage Telephone Co., 52 miles of wire, $70 per mile; Blue River Telephone Co., 12 miles of wire, $20 per mile. Milan Telephone Co., 5 miles of wire, $50 per mile; Luce & Ohio Townships Telephone Co., 647 miles, $35; Lynn Local Telephone Co., 841 miles, $15; Rushville Co-Operative Telephone Co., 400 miles, $80; Central Union Telephone Co., 94,310 miles, $30; Citizens' Independent Telephone Co., 2,864 miles, $90.

Improvements and Extensions Planned at Neoga, Ill.

Within a short time the Neoga Telephone Co., of Neoga, Ill., will rebuild part of its lines and install cable.

This system was organized in 1901 by Dr. J. A. Baughman, and was purchased from him in 1909 by Drs. S. E. and C. A. Bigler and A. F. Springer. Since that time it has experienced a growth from 360 telephones to 430.

Progress in the Railway Telephone Dispatching Field

J. A. Kick Writes on the Use and Abuse of Dry Batteries—What the Manufacturers Should Do—Grand Trunk Railway Preparing to Expend Half Million on Dispatching System—This Department is Open to Contributors and Practical Experiences are Desired for Publication

Dry Batteries—Their Use and Abuse.

By J. A. Kick.

The study of dry batteries is an important one to the railroad telegraph departments at the present time, when the telephone is to a greater or less extent superseding the telegraph.

The principal uses to which dry batteries are put in modern railway work are as follows:

1. In transmitter circuits of regular, yard, siding, dispatching, private line and intercommunicating telephones.
2. In the local bell or local selector circuits of train dispatching circuits.
3. In the main line circuit of train dispatching and message circuits.

The uses for these different purposes are quite different and there is a field for development of special batteries for these special requirements, for here as well as elsewhere the cost of maintaining circuits is largely a labor cost rather than a material cost.

TESTING.

One of the principal things to be considered in the use of dry batteries is the ability to be able to tell readily when to discard a dry battery or, in other words, when the useful life of a battery has been completely exhausted?

There are various testing devices in the market designed to give this information, but the chief trouble with them all is, that, in the actual use of the testers more of the vitality of the battery is exhausted than in a long period of active use in regular service.

If this condition were essential, that is, if such an instrument could not be readily made, there would be some excuse for the lack of it, but so far as I can see now there is no particular reason why a tester could not be readily designed to give the voltage or amperage and still have a sufficiently high resistance so as not to place too large a draw on the battery when in use.

For the first type of service there has been designed a battery tester arranged to give a cut-off reading of three cells in series for both high and low resistance transmitters. This type of instrument designed for a single cell for each of the three classes of service would prove very satisfactory. It is possible that a single instrument could be designed to meet all of these conditions by having different cut-off readings, but it is obvious that no single cut-off point could be fixed for all these classes of service, as the conditions are vastly different.

In the first condition the batteries should have such a value of current flow, through a resistance comparable with the resistance of the instruments with which the batteries are normally used, as to insure efficient service, and it is to be noted also that the conditions required of a battery for talking purposes are quite different from those required to operate a bell or selector in a local circuit, where intensity is not such an important factor as in the transmitter. And, again a large bank of one or two hundred cells such as are used for main line signaling on dispatching and message circuits, would have to be tested with quite a different point in view.

For instance say an arbitrary cut-off point is fixed for transmitter work on one of these scales which would require 6, 8 or 10 amperes to produce the proper impulse in the tester. Perhaps batteries taken from such circuits could be used down to 2 amperes in the local circuit of the bell to good advantage. It will be seen that if the batteries were cut out at 8 amperes on the bell circuit, about half of their usefulness would be wasted, and the same rule would hold in the main line battery.

The trouble is now that not enough study has been made of the subject to enable the intelligent use of these principles.

There is one other thing that should be mentioned about dry batteries and that is the variability of some types of dry batteries on the market. One barrel may test as high as 22 to 30 amperes, and yet another barrel out of the same lot will run only 12 to 18 amperes, or even lower.

If the claim of some manufacturers, that the lower the amperage output at the start the longer the life of the battery, would only hold true, one might become reconciled to this variation, but I have found the reverse true in almost all cases. The low batteries at the start remain low and the life varies not inversely, but directly as the output at the start. About the only thing possible for the consumer to do now is to test each battery received from the manufacturer and reject all that fall below the standard fixed for each class of batteries.

The trouble now is that the cost of dry batteries being so low, the cost of testing is such a large per cent of the total cost of the batteries that he consumer would rather run the chance of disappointment in the operation of a cell than pay half the cost of the cell to know what it is going to do.

Improve the quality, raise the price if necessary. Guarantee the product and not only pay for "under test" batteries, but pay an indemnity sufficiently large to reimburse the consumer for expense incurred in testing. In replacing cells showing abnormally short life, and in short, bringing up the standard all along the line, something of this sort will be done. Who will do it first?

It has so often been said, there is no adequate means of determining beforehand what a battery will do owing to defective or unreliable material. Surely this could be remedied after the batteries are made, and the grading could be done then. The sooner manufacturers realize the importance of this grading of batteries, the sooner the trade will become established and the consumers will cease to be continually on the fence regarding what battery to buy.

Of course, there will always be a bargain-hunting class in this business as elsewhere, but if the grading is properly done, these bargain hunters will always have a chance. Certain manufacturers have recently agreed to guarantee their batteries to give a certain period of satisfactory service, but in so doing have not differentiated between the several classes of service. Provided the cells do make good on this guarantee, they will be satisfactory to the buyer, but I doubt the ability to adapt the same cells to three or four classes of service, the requirements of which range from almost the maximum output at very short intervals, to very small output at long intervals, which really represents little more than shelf life limitation.

Batteries for each class of service must be special for that service and by careful study a guaranteed service will appeal to the consumer and the manufacturer will profit by the change.

PROPER TRANSPORTATION AND INSTALLATION.

Now, just a word as to the abuse of batteries. All dry batteries, as a rule, regardless of the make, should be kept

in a dry, moderate temperatured place for storage, and when installed these conditions should also be met as far as possible. Batteries stored or installed in a damp or low temperatured room absorb moisture, and internal action is set up. This rapidly deteriorates the cell and in a few weeks such a cell is worthless, whether it has been in service or not. Another point to be taken into account in considering the life of dry batteries is the method adopted for handling. They should be handled carefully so as to avoid breaking or cracking the sealing compound, as if this is done moisture gets in and the chemical constituents of the air, acting in conjunction with the moisture, rapidly reduce the cell to a worthless piece of material.

Dry batteries are frequently handled in linemen's ordinary tool sacks, risking damage by "shorting" as well as injury to the cell by dislocating the terminals or breaking the sealed top. Dry batteries should never be handled or transported in metal pens or trays, as invariably some of the cells will short-circuit and be useless in a few hours.

In installing cells care should be taken to see that there is proper separation to insure that a portion of the cells shall not be "shorted" out of the circuit by contact of binding posts.

In short, to summarize the unsatisfactory conditions of batteries both as regards the manufacturer and consumer.

The manufacturer ought to

1. Manufacture batteries for different services.
2. Grade all batteries, guarantee them and maintain a standard absolutely.
3. If necessary, increase the cost sufficiently to insure perfect cells and provide indemnity for loss of time and service incurred by the consumer due to unsatisfactory or below-grade batteries.

The consumer ought to

1. Insist on graded material, and inspect to insure receipt of it.
2. Prepare specifications to cover requirements and indemnity required.
3. Insist on the proper handling of the batteries.
4. Observe the following "don'ts":
   (a) Don't handle in metal pans.
   (b) Don't crowd installations.
   (c) Don't install in damp places.
   (d) Don't test with low resistance voltmeters and ammeters.
   (e) Don't handle in sacks or tool grips.

Grand Trunk Railway Will Spend $500,000 on Telephone Train Dispatching System.

"In another year the Grand Trunk will probably use the telephone over the entire system, for dispatching trains," said C. S. Cunningham, acting superintendent, recently. "At present telephones are being installed in Canada to take the place of telegraph, but the first changes are being made there on account of the busy, single-track lines around Montreal, which need immediate attention. There is no doubt but what the new system will supplant the telegraph, for it is much superior in flexibility of operation and it is considered a good deal safer. As soon as the crowded lines in Canada are equipped, I think the service will be extended to this country."

For eighteen months the company has had two telephone circuits in operation near Allandale, on the Toronto-North Bay division, and they have given entire satisfaction. The circuits are 140 and 165 miles in length, but require only one operator each.

The entire system of the railroad totals over 4,700 miles. The telephone dispatching department will include thirty-one circuits. In the new system the number of operators will remain the same. A rough estimate of the cost of installing the wires and placing the system in operation is $105 a mile. This will bring the entire cost around $500,000.

A copper metallic circuit is used, the wire weighing 210 pounds per mile. It is estimated that the telephone saves 50 per cent. in time over the present telegraph system.

Bell Instructions for Operating Private Branch Exchange Telephone Switchboards.

The New York Telephone Co. has issued, through its traffic department, a booklet of instructions for the operation of private branch exchange switchboards, which should be extremely helpful in standardizing this branch of the service.

Parts of the book are devoted to explanations of the special devices of equipment used in New York. The following general instructions, however, might well be considered by companies in all parts of the country, as a means of educating their P. B. X. subscribers and the attendants of their switchboards in proper methods of co-operating with the central office operators:

Answer all calls promptly.

Answer incoming trunk line calls with name of your firm or the number of the listed line.

Answer calls from extension stations with "Number please?"

Repeat slowly and distinctly the number or name asked for by the person calling.

Request the extension users to remain at the telephone on city and suburban calls until connection is completed or until the central office operator reports, and always connect the calling extension line with the trunk line before giving the call to the central office operator.

Give calls to the central office operator slowly and distinctly, and correct the operator if she repeats incorrectly.

When making long distance calls give the long distance operator the number of the trunk line over which the call is passed, and if it becomes necessary to ask for a report on the call, signal the operator on the same trunk line.

Supervise calls as closely as possible until connection has been established.

If the extension line asked for is in use, advise the person calling that the extension is busy and request them to hold the line. Report that the extension is still busy at intervals of about one minute, as long as the extension remains in use. If for any other reason it is impossible to complete the connection within a minute, advise the person calling that you are trying to get the person or department asked for. Make similar reports at intervals of about a minute until connection is completed or call abandoned.

Disconnect as soon as the extension station gives the disconnect signal.

Be courteous and tactful in all dealings with both subscribers and operators.

Do not hold personal conversations on either incoming or outgoing calls.

Keep an alphabetical list of the names and numbers of extension users, in order to prevent confusion when a relief or substitute attendant operates the switchboard.

Stickers Used as Business Producers.

Lysle I. Abbott, receiver of the Independent Telephone Co., of Omaha, is distributing among friends and subscribers to the Omaha system, stickers in the form of a shield bearing the words, "Please call us on the Independent 'Phone." These stickers are being placed on correspondence, bills, etc., and Mr. Abbott says are bringing the Independent telephone to the attention of a good many people, and correspondingly increasing the use of that instrument.

Sparks from the Troubleman's Department

When a butcher answered the bell of his telephone instrument one day the shrill voice of a little girl greeted his ears. "Hello! Is that Mr. Wilson?"

"Yes," he answered kindly.

"Well, can you tell us where grandpa's liver is? We've got to put a hot flannel on it and we can't find it."

Patron—Operator, what does it cost to talk to Skunk Hollow?

Operator—Thirty-five cents for three minutes and ten cents for each additional minute.

Patron—I'll talk ten cents' worth; it will take me only a minute.

An inquisitive purchaser in a Chicago candy store saw a sign on the telephone, "You may talk for five minutes."

"Why not three minutes?" he asked the clerk as she removed one chocolate drop permanently from the possibility of a sale.

"We let them talk five minutes," she replied, "because the longer they talk the more candy they see and the more candy they see the more they buy. It always works."

Mr. Dubbs (with newspaper)—It tells here, my dear, how a progressive Boston woman makes her social calls by telephone.

Mrs. Dubbs—Progressive! Huh! She's probably like me. not a decent thing to wear.

Jack—I want you to understand I am connected with one of the best families in town.

Jill—Yes, we have a telephone in the house, too.

"What law is that timid, shrinking one over there by the door?"

"The unhappy law that looks as if it wished it were dead?"

"Yes; the one with the black eye."

"That's the Sherman law."

"And what is this bold and florid one that everybody treats with so much deference?"

"That's the unwritten law."

An anxious mother determined to ring up the day nursery to ask for some advice as to her child, says an exchange. Calling for the nursery, she is given Gottfried Gluber, florist and tree dealer. The following conversation ensues:

"I called for the nursery. Is this the nursery?"

"Yes, ma'am."

"I am so worried about my little Rose."

"Vat seems to be der madder?"

"Oh, not so very much, perhaps, but just a general listlessness and lack of life."

"Ain'd growing right, eh?"

"No, sir."

"Vell, I vill dell you vat to do. You take der scissors und cut off about two inches from der limbs, und——"

"Wha-a-t?"

"I say, dake der scissors, und cut off about two inches from der limbs, und den turn der garten hose on it for aboud four hours in der morning——"

"Wha-a-t?" And the receiver vibrated at her tone.

"Turn der garten hose on it for aboud four hours in der morning, und den pile a lot of black dirt all around und shprinkle mit insegt powter all over der top——"

"Sir-r!"

"Shprinkle mit insegt powter all ofer der top. You know it is usually noddings but pugs dot——'

"How dare you, sir? What do mean by such language to me?"

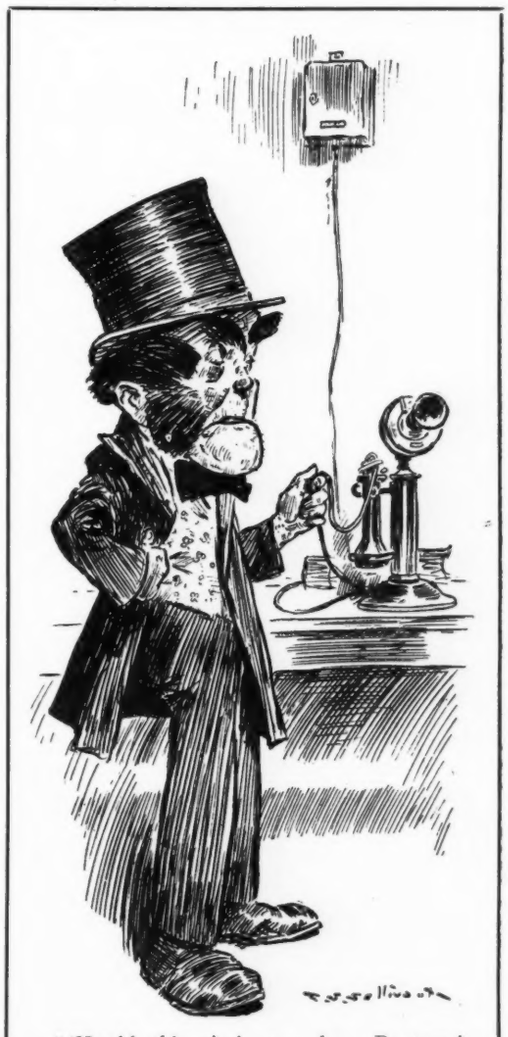
"Noddings but pugs usually causes der troubles, und den you vant to vash der rose mit a liquid breparations I haf for sale here——"

"Who in the world are you, anyway?"

"Gottfried Gluber, der florist."

Manager—Has Mr. Owens taken any action on that bill of his yet.

Collector—Yes; he kicked me out the last time I called to collect it.



"'Hould th' wire', says he. Begorry! next toime he can come here an' hould it himself.—*Scribner's Magazine.*

Israelite (sending in city call from country exchange, night rates)—Gife me Main 12345 bleaze.

Operator—Anyone there?

Israelite—Sure ting.

Operator (calling)—Central, this is ——. Give me Main 123456 A. B., please.

Israelite—No, no, not Abie—Max.

Operator—Are you waiting?

Subscriber—No. I am biting my initials on a tombstone.

Legal Cases and Decisions

By A. H. McMillan

Question of Outstanding Collected Accounts.

We are buying a small exchange close by including all outstanding accounts owed to the exchange. The man we are buying from has owned it for about six months and has had a man running it for him. The man he bought from turned his account over to the man the second party had running it, and claims that a large part of it has been collected but he has not been able to get it. The man collecting it claims he turned it in with other collections. The man first owning it claims he is going to hold the man we are buying from responsible for the accounts. Can he do this or can he in any way hold us responsible, or the exchange responsible for these accounts? We claim he cannot for he simply got the man managing the exchange to collect his accounts for him and we supposed, was to give him something for doing so. The up-shot of the whole business is that the man collecting it put it in his pocket and turned it in to no one.

There is no way in which you, as a purchaser, or the exchange, can be held responsible for these accounts. The question in the case would be whether the manager of the exchange was acting on behalf of his employer in undertaking to collect the account. If he was so acting, his employer would be responsible for his failure to turn in the proceeds. If he was not acting for his employer but was acting independently, his employer is in no way responsible.

Height of Wires in Oklahoma.

The following letter is from J. R. Spielman, assistant attorney of the Pioneer Telephone & Telegraph Co., of Oklahoma City:

I note in answer to a query as to how high wires should be placed across railroads in the State of Oklahoma, that you had probably not learned of an order of the Corporation Commission, fixing such height.

For your information, I therefore enclose copy of the order of the Corporation Commission No. 353, which regulates the manner in which telephone and telegraph companies shall construct their lines across steam and electric railways in the State of Oklahoma.

I am glad to be of this service to you as you have favored me on more than one occasion without knowing it, with the references to cases contained under that heading of TELEPHONY for which you write.

We had not received notice of the order you enclose at the time the query you mention was answered, and we thank you for the information.

The following is a synopsis of the order referred to in the above letter:

Section 1. Poles next to railroad tracks sustaining wires crossing such tracks must be of sound timber, cedar or better, with not less than 6-inch tops, and placed at least 5 ft. in the ground. They shall be of such height that the wires shall not be less than 25 ft. above the rails after allowing for sag.

Section 2. All new construction or reconstruction of poles next to railroad tracks and sustaining wires over such tracks must have a double cross-arm of standard make, fixed to the poles with ½-inch through bolts. All cross-arms must be braced with iron braces and locust, hedge or steel pins used. The crossings where cross-arms are not used must be protected by double brackets of standard make attached to the pole with 40 and 60 penny nails. They shall be protected by a guard wire of not less than the size used on the line.

Section 3. Poles shall be located not more than 52 ft. and not less than 10 ft. from the nearest rail of any track and shall cross the track at right angles when practicable. For proper clearance, owners may be compelled to construct their wires not higher than 28 ft. above the top of the rails, and if the wires of the railway company are higher than 27 ft. above the top of the rails, telephone wires may be strung underneath at a height of not less than 25 ft., allowing for sag. Electric light wires carrying 2,300 volts or less, alternating current, or 550 volts or less, direct current, shall not be placed lower than 25 ft. from the top of the rails and electric wires carrying higher voltage not nearer than 30 ft. from the top of the rails and shall have 8 ft. clearance from telegraph or telephone wires. All electric and power wires of over 500 volts shall be thoroughly insulated and protected by basket guards properly grounded at each pole.

Section 4. In case of established telephone and telegraph wires at public crossings of a railroad, the railroad company in reconstruction or new construction must clear such telegraph or telephone wires not less than 2 ft.

Section 5. If a telegraph or telephone company wishes to place its wires under the railroad tracks, it must give 15 days' written notice to the railroad company's agent at the station nearest the crossing. The wires, cables, and conduits, shall not be exposed on the surface nearer than 8 ft. from either rail on each side, and in every case shall be at least 3 ft. below the bottom of the rails. All such work shall be under the supervision of an authorized agent of the railroad company. Excavations must not interfere with the safe operation of trains nor shall an excavation be left open longer than 12 hours or during the night time, without a watchman present.

These rules do not apply to feed or trolley wires of the electric railway which must be at least 22 ft. above the top of the rails of any railway crossed thereby. Sound cedar or iron trolley poles must be used with not less than 7-inch tops. Present poles may be used provided a 23-ft. clearance can be obtained thereby.

Is Company Liable for Assault by Its Employe?

A physician at Dumont, Iowa, was severely assaulted and injured by a man named Brandy, who was in charge of a telephone booth belonging to the Iowa Telephone Co. The physician went to the booth and Brandy tried to get him again for the party called by him but failed to do so and so reported to the physician. About half an hour later the doctor returned and Brandy refused to try to get the party wanted on the alleged ground that there was no such person on the line. The doctor insisted that a second attempt should be made, an altercation arose which resulted in Brandy forcibly ejecting the doctor from the building. The doctor sued the telephone company for his injuries.

It appeared that Brandy was occupying his own building where he was engaged in a real estate and musical instrument business, living over it. In his upstairs rooms was the telephone exchange in charge of his wife. He rented a switchboard from the telephone company. The booth was in the first story of the rooms occupied by Brandy in his business.

The court held that a judgment of $2,000 against the company was justified, finding that Brandy was in charge of the booth for the telephone company and extended its conveniences to customers and collected tolls for its use. The court also found that the evidence was sufficient to warrant a finding that the altercation which arose was wholly in relation to the company's business. St. Peter vs. Iowa Telephone Co. 131 N. W. 2.

Rates Can Not Be Changed by Initiative and Referendum.

The charter of Dallas, Texas, gives the city power, by ordinance, to regulate and fix the charges of local telephones, acting through its board of four commissioners. The charter also provides that any proposed ordinance may be submitted to the board by petition signed by 5 per cent. of the electors.

The electors of the city by a majority vote adopted an ordinance limiting the telephone rates to $5 per month for business telephones and $2 per month for residence telephones. The Supreme Court of Texas held that the charter did not authorize a submission to the electors of ordinances upon any subject of legislation named in the charter, but only upon subjects to which the initiatory method was applicable, and that an ordinance regulating telephone rates could not be presented to the electors for adoption, since a fair hearing upon the reasonableness of the rate fixed, as required by a section of the charter that forbade any change in rates except after notice and a fair hearing, could not be had by that month. Hence the rate ordinance was declared void. S. W. Tel. & Teg. Co., vs. City of Dallas, 134 S. W. 321.

Practical Letters from the Readers

Use of Cable in Small Telephone Exchanges.

In a paper presented at the last meeting of the Wisconsin State Telephone Association, and published in pamphlet form by its officers, J. M. Storkerson, superintendent of the La Crosse Telephone Co., gives some interesting experiences showing the ultimate economy of all cable as against open wire.

He tells how his company was able to build a satisfactory underground lead without the men engaged in the work having had any extensive experience along this line. A small manhole was built in one day at a cost, complete, of $14.09, from instructions contained in a book issued by the Fibre Conduit Co. of Orangeburg, N. Y.

Another section of the paper shows what a simple proposition it is to lay conduit in a small exchange. With reference to the financial side of cable construction, Mr. Storkerson says:

Time also showed that the maintenance of open wires on from ten to a dozen cross arms was expensive, with cross arms to replace on an average of seven years, slack to pull frequently, corners to reguy every few years and more or less constant wire trouble.

Depreciation that was a myth a few years ago is now taken seriously as a fixed charge to be reckoned with and the one fact I wish to impress on you is that every twelve years you will have to replace every pole, every cross arm and every iron wire. Some parts of your construction will last longer than others but twelve years is a fair average life of the whole so in planning your rebuilding, if money can be saved by the use of cable, it will be poor policy to continue in the manner you first adopted.

In a small town we installed an underground system of four manholes and six distributing poles during the past summer and the cost of this work may be of interest to you.

1700 feet fibre conduit	$93.50
17850 lbs. gravel	10.63
21½ sacks cement	9.53
Old iron	2.01
6-3 inch iron pipe bends at	20.36
1½ old pipe, reducers and staples	16.58
4 18-in. manhole covers and frames	28.00
Freight and drayage	28.92
Miscellaneous expenses	1.27
Labor	153.21
Total cost	$364.01

With an expenditure of only $364.06 we improved the appearance of that town very materially and it is greatly appreciated by the citizens. With the expenditure of a like amount next year in the same class of construction will be all the underground that town will require for years to come. The largest cable that we will have from the underground to the cable poles will be 25 pair.

We are satisfied from our experience that there is economy in the use of underground construction for all cables of 50 pairs or over except where extraordinary conditions are encountered. It must be remembered that the depreciation on underground conduit may be figured at only 2 per cent. and on underground cable at only 4 per cent.

I would recommend no more than one cross arm for carrying open wires either for a small or a large exchange and for any capacity more than that the use of cable will prove economical. I have here the cost of installing 1,600 feet to 25 pair cable with four cable terminal cans which I hope you will compare with the cost of some of your open wire construction of about the same distance.

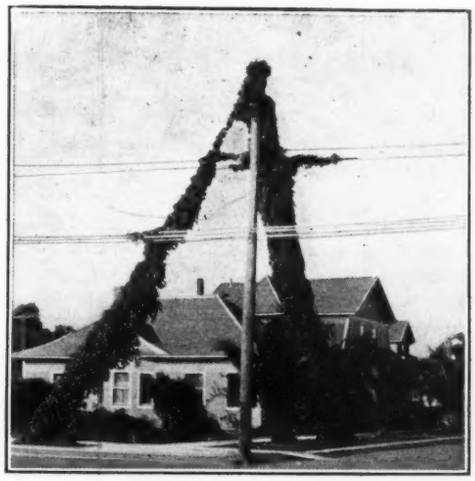
1,600 feet 25-pair cable	$143.61
2,500 feet ⅜-in. messenger strand	36.70
4 15-pair cook terminals	26.70
4 pole seats	6.29
Lead sleeves and solder	3.93
Cable hangers and misc.	7.01
Labor	71.60
Total cost	$295.84

The most difficult part of cable construction in small exchanges is to find a cable man or a plumber to wipe the joints of the cable, but by using Cook's self soldering cable and the Matthew's splicing joints a manager or lineman with a little practice can become almost an expert in that line.

Picturesque Trouble in California.

The accompanying photograph presents a condition which is regarded as very picturesque in Long Beach, Cal., where it exists, but one which must bring deep grief to the troubleman.

Some years ago, says *Popular Mechanics*, an expert of the department of Agriculture in Washington referred to a certain variety of morning glory seeds as a kind that the planter must drop into a deep hole quickly and then run away to avoid being tripped up by the vine in its growth. The perfection of a plant of this nature is reached in California and other places of equable climate, where it grows in the utmost profusion, sometimes becoming a menace by the manner in which it entangles wires or shuts out light from a house, but more often adding beauty to the landscape and completing the ideal of the "vine covered cottage" of song and story. In Long Beach, California, there is one specimen of this vine that has grown along the guy wires of a telegraph pole in a mass several feet thick, making a very attractive festoon for a prosaic and otherwise undecorated pole.



What the California Troubleman Finds.
(Courtesy Popular Mechanics.)

The End of the Blake Transmitter in Michigan.

It is reported that the Michigan State Telephone Co. will take advantage of the Giles law to readjust the rates of subscribers who have never signed contracts at the higher rates which were put in force at the time Blake transmitters were generally discontinued. A considerable number of these antiquated instruments are still in use in Michigan. At Big Rapids, for example, about seventy are now in service among a total of 724 subscribers.

From Factory and Salesroom

Conventions: North Dakota, Bismarck, September 27, 28

Esterline Company Opens Detroit Office.

The Esterline Co., La Fayette, Indiana, manufacturers of the Esterline graphic meters and the Matchless electric lighting and ignition system, announces the appointment of Le Moyne L. Parkinson as district sales manager for the state of Michigan, with an office at Detroit.

Esterline Graphic Meter.

Mr. Parkinson leaves the Standard Underground Cable Co., Pittsburgh, Pa., with which he has been associated for the past five years. Having had charge of the sales of standard underground cable for electrical purposes, Mr. Parkinson is already well known to the electrical trade.

He was graduated from Geneva College in 1895, and the same year entered the employ of the Beaver Valley Water Co., where he continued for eleven years, as assistant general manager. He is also a graduate of Rand's Commercial College, and of a special course in electrical engineering at the Cosmopolitan University, New York City.

Mr. Parkinson entered the employ of the Standard Underground Cable Co. in the sales department in 1906, in which position he has been very successful and has made a host of friends. His wide experience and acquaintance bespeaks success for him and this company in the Michigan territory.

Motorcycle As Ready Means of Transportation.

It is now well established that, in telephone work, a motorcycle will increase the territory one man can cover and will give a better service in that territory because it is always ready and willing to go, and at a speed which quickly covers from five to ten miles on any kind of roads.

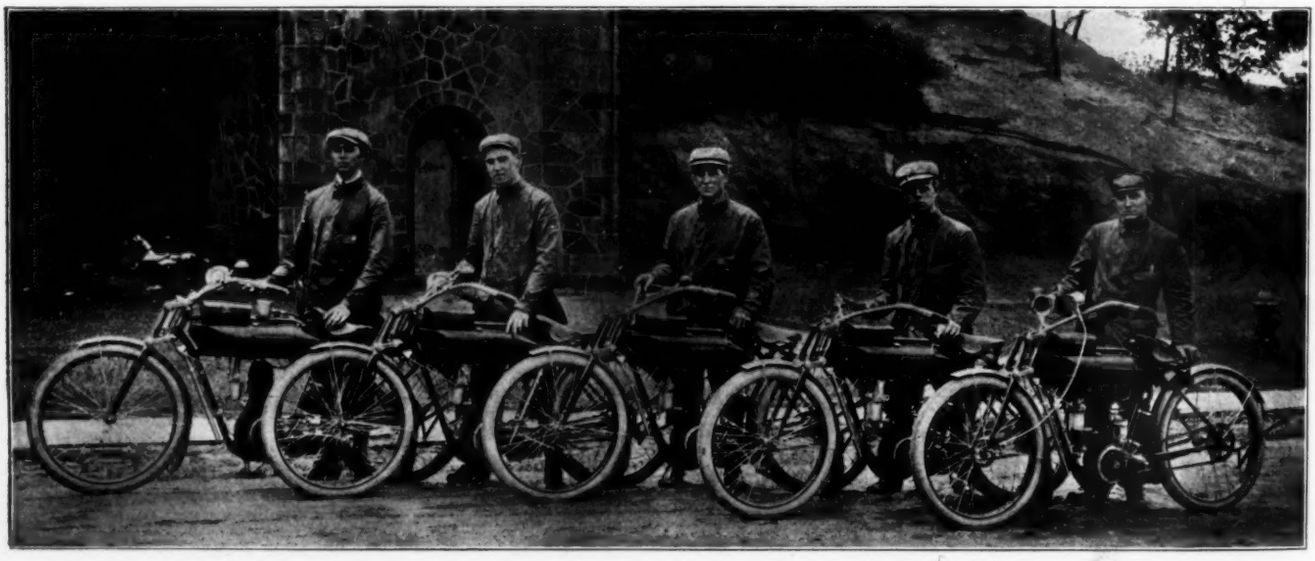
A reliable luggage carrier may be equipped on the rear of the machine so that extras and tools may be carried for repair jobs. A high grade motorcycle will carry a rider and an extra 100 or 150 pounds of luggage without any trouble and do it every day, providing the equipment is such that it will stand the weather conditions. Thor motorcycles are equipped complete for heavy service work, as the undergeared chain transmission will travel through rain or snow without giving any trouble. A free engine clutch is supplied as regular equipment, allowing the rider to negotiate any kind of roads at any speed and to have the machine under perfect control in crowded city streets. The machine is easily kept in a hallway or shed. In fact, it only requires about two feet to run it in and offers the advantage of always being where it is needed, which in itself is a big advantage in telephone work where such service frequently is required.

For all-around every-day service, the motorcycle is undoubtedly the handiest and most economical means of rapid transportation and the fact that numerous telephone companies are now using it is convincing proof of its popularity. The accompanying illustration shows the manner which telephone men generally are taking to this rapid. reliable, convenient and economical means of transportation.

Once used, the motorcycle is hardly ever discarded, as it solves so many problems where it is important that first class service be upheld.

B. & O. Orders Forty Gill Selector Outfits.

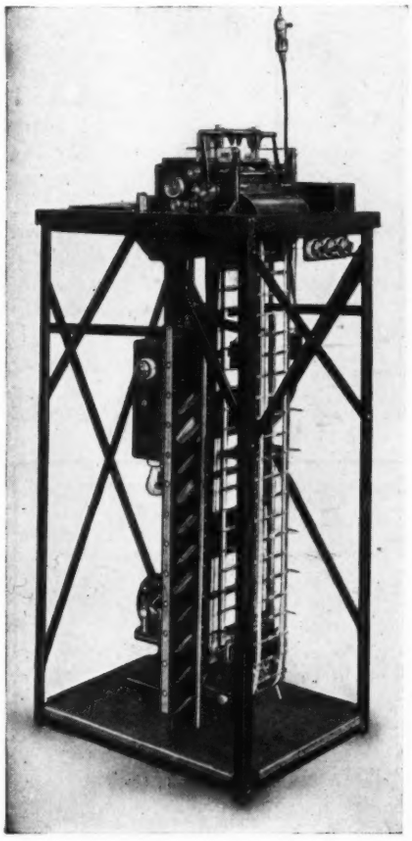
The Baltimore & Ohio Railroad has ordered of the United States Electric Co., of New York, Gill Selector telephone train dispatching outfits for forty stations, to be used in the etxension of its telephone dispatching circuits from Clarksburg to Salem, W. Va. A message circuit will parallel the train wire. This installation will complete the train dispatching circuit from Grafton to Salem, and is of interest as a refutation of the report spread about three months ago that the Baltimore & Ohio was to abandon telephone dispatching.



Ready for the Start—Five Thor Motorcycles Made by Aurora Automatic Machinery Co., Chicago.

Statistics Compiled by Machinery.

The Statistical Service Co., Monadnock Block, Chicago, has issued a booklet entitled "A Modern Midas." It describes methods for the compilation of statistics, with the aid of automatic sorting and tabulating machines.



Sorting Machine.

The system, in brief, consists of transcribing data upon specially designed cards by means of punching holes into cards, the holes representing printed figures. The punching is done by the use of a key punch, a machine having twelve keys and operated similarly to a typewriter. This is the only manual labor necessary, and, as all data is recorded from the original records, an efficient operator can punch from 1,000 to 3,000 cards per day, according to the data to be recorded and the records from which it is taken. Numbers, prices, etc., are punched by figures, while states, counties, plans, etc., are punched by numeral codes. The cards are 3¼x7⅜ inches in size and may be used in various colors to denote different branches of work. It is best to record the maximum amount of information on the card at one operation, so that statistics may be compiled on any subject, at any future time, simply by the use of the sorting and tabulating machines.

When the cards have been punched they are put into the electrical sorting machine, which automatically sorts the cards into twelve divisions at one operation, according to the holes punched in the cards, at the rate of 250 cards per minute.

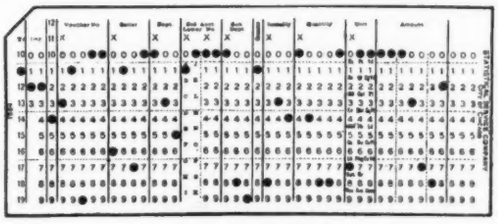
Having been punched and sorted, the cards now go to the electrical tabulating machine, a device that automatically adds four individual groups of figures (seven figures to each group) at the rate of 150 cards per minute. By attaching an automatic card-counting device one may also record the number of cards being tabulated, keeping an exact record.

"In transacting any business," says the company, "questions are bound to arise that must be answered truthfully and quickly. With a series of statistical reports on your desk such questions will be answered with the greatest degree of accuracy. Such reports form a source of information so easily accessible that they are necessary to every modern business.

"In each one of our offices we have installed complete

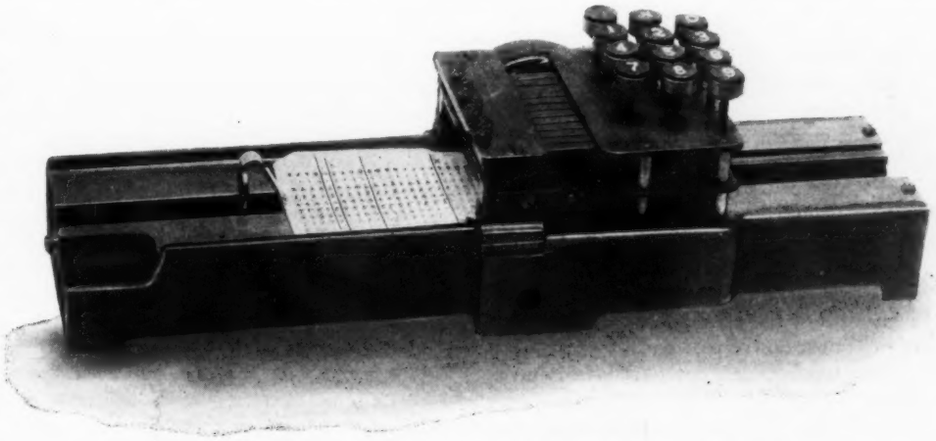
Tabulating Machine.

equipment for the compilation of statistics by automatic sorting and tabulating machinery, and in each office we employ skilled labor. We are, therefore, able to render you complete statistical service, preparing our cards from



Voucher Distribution.

your records in your own office and taking no records from your office but our cards, which we sort and tabulate and furnish you, regularly, reports containing any information you may desire and special information upon request. This work is handled at a stipulated price per month."



Key Punch, Showing How Cards are Punched and Records Made.

The system of compiling statistics by the use of the automatic sorting and tabulating machines is already in use by several large telephone and other public service corporations. Copies of the booklet will be sent upon request.

Some Recent Drilling Records.

At the recent joint conventions of the Railway Master Mechanics' and Master Car Builders' Associations, held at Atlantic City, great interest was aroused by some phenomenal results obtained in a demonstration test of twist drills. As the durability and efficiency of tools are such important factors in economical production these results should be welcomed by all interested in this subject.

The Cleveland Twist Drill Co., of Cleveland, had a Foote-Burt No. 25½ high duty drill press in operation in connection with its exhibit and the results obtained from tests of Cleveland milled and flatwist drills taken from stock are given in a table which can be obtained from the company.

The first tests were made for the purpose of demonstrating what is good shop practice, i. e., the drills were put through at speeds and feeds that would be economical under average shop conditions. Then, to demonstrate the reserve efficiency and durability of the drills, "stunts" which demanded extremely high rates of speed and feed were attempted.

The highest rate of speed in drilling known to machine shop practice was attained by a stock 1¼ in. paragon flatwist high speed drill in successfully removing 70.55 cu. in. of cast iron in one minute, repeatedly cutting through a heavy billet at the record-breaking rate of 57½ inches per minute—nearly an inch per second. This drill ran at 575 rev. per min. with 1-10 (.100) in. feed per revolution, successfully withstanding the terrific strain of this extreme speed and feed. Before attaining this maximum performance which was approached gradually, numerous other "Cleveland" drills were put through at the rates of 25, 32½, 33½, 35 and 47½ inches per minute. In no case was the limit of strength of the drills reached, but the speed of 57½ inches per minute could not be exceeded on account of the inadequate capacity of the electric feed wires which brought current to the motor driving the drill press.

Drilling at such high speeds and heavy feeds is not to be recommended as economical shop practice, and this performance will in all probability not be repeated in many shops. These results were only made possible by carefully established ideal conditions, such as:—absolute rigidity in the machine, uniform and sufficient driving power, solid clamping of the work, perfect grinding of the tool and most expert handling. They are of value chiefly as demonstrating the power and rigidity of the machine and the exceptional reserve strength of the drills.

Another noteworthy test was made with a 2½-in. milled drill from stock. It drilled 68 holes through a billet of machinery steel 4¼ in. thick, without being reground. This drill was operated at 150 rev. per min. with a feed of .015 per revolution removing a total of 1,418 cu. in. of material. Although the drill was still in good condition the test was cut short at this point by the convention coming to a close. This test demonstrated what can be done all day long in any shop properly equipped and is indicative of what results should be expected in economical high speed drilling.

A Word For Marline Cable Hangers.

In publishing the accompanying photograph in last week's issue of TELEPHONY, we inadvertently reflected upon Marline cable hangers, as compared with metal hangers. The National Telephone Supply Co., of Cleveland, calls our attention to the fact and points out, at the same time, that Marline hangers, cost considered, do not suffer by the comparison, even though they be exposed to an occasional fire. The argument advanced by the National Telephone Supply Co., which is sound and cogent, is as follows:

"An article appeared in your issue of August 5 entitled 'An Argument for Metal Cable Hangers,' accompanied by a photographic view showing Marline cable hangers burned off by fire, permitting the cable to drop within reach of the flames.

"We want to direct your attention to the fact that any fire that is hot enough to burn Marline cable hangers would probably ruin the cable though it was installed with metal hangers.

"The first cost of Marline cable hangers is so much less than that of any metal hanger produced that the difference in the price of installing cable for a fair sized plant would be enough to buy several sections of cable like the one destroyed in this fire and still have plenty of money left to pay for labor for splicing them in.

"Furthermore, the accompanying illustration shows the strength of the Marline hanger, which, although subjected to a sudden drop of a thirty-five foot span of cable, withstood the extra weight and strain without breaking the marline or opening the hooks.

"Marline cable hangers are doing good service in every part of the United States and Canada. In buying, however, care should be taken by telephone companies to select a good grade of hangers for best service. Hangers made from 3-ply pure American hemp, and hooks re-galvanized by hot dip process after being formed, should be used."

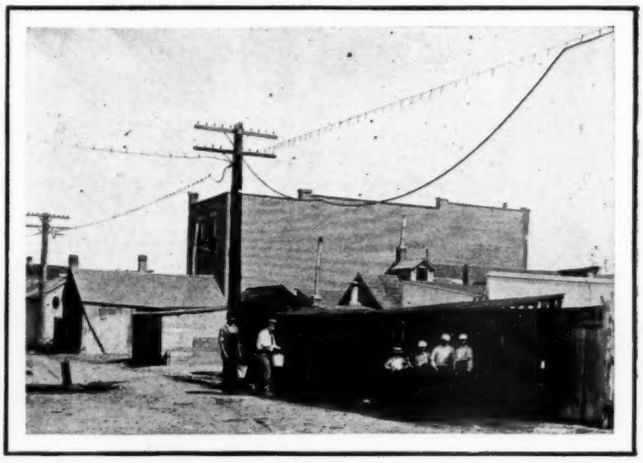


Illustration which Reflected upon Marline Hangers.

The New Turner Interior Telephone.

K. M. Turner, of Jamaica, L. I., has invented a new telephone for interior inter-communication, which although introduced commercially but a few months ago, is said to be commanding widespread attention in the business world.

The instrument, in several of its distinguishing features, represents a wide departure from the system of interior communication in general use heretofore.

It dispenses with the need of a telephone exchange and operator and eliminates the necessity of talking directly into the instrument or holding a receiver to the ear when maintaining conversation. Every master station is its own exchange and every person using the instrument is automatically made his own operator.

The receiving and transmitting discs, which are a trifle larger than those of the ordinary telephone, are declared to possess extraordinary sound magnifying properties. They are encased in a box about a foot wide and eighteen inches high, which is placed on the desk in front, or at the side, of the individual using it. Alongside the discs are a series of small celluloid levers, each lever representing the head of a department or official of the establishment. By raising a lever the employe desired is notified by the ringing of a bell that he is wanted. Whether he is sitting at his desk in front

of an instrument or is in another portion of the room at the time the signal is given, he can carry on conversation without interruption, as the highly sensitized transmitting diaphragm is said to pick up the most minute sounds proceeding

New Turner Intercommunicating Instrument.

from any direction or distance and make them audible in the office in which the call is initiated.

If necessary the executive can engage five, ten or more of his staff in conversation simultaneously and thresh out the subject under discussion in all its phases, as effectively as if all of them were gathered together in one room.

With the same expedition and machine-like precision the head of a department is able to notify his stenographer in another room that he has correspondence to dictate and proceed to dispose of it, without requiring her to leave her desk.

The instrument, it is stated, despite its hyper-sensitive qualities, is sturdy in construction and will stand up under all

Another Form of Turner Interior Telephone.

conditions of temperature. By an ingenious arrangement of its parts, the voice as it issues from it is clear and vibrant as a bell. Conversation can be carried on through it while twenty feet away from the instrument and the replies of the person on the other end of the wire can be heard with the same facility as if one's ear was at the receiver.

Aside from its more potential commercial virtues, the new instrument has solved the problem of sanitation in connection with interior telephones, by doing away with the bacteria breeding transmitters.

The new telephone, which has been given the name of its inventor, is the third important invention of Mr. Turner. His accousticon to aid the deaf has been widely used through the world for some years. The dictograph, the second of his inventions, has had a wide and varied career of usefulness since it was put on the market three years ago. Recently it acquired new fame as a detector of grafters, being used by detectives of the W. J. Burns agency to entrap Ohio legislators in Columbus, when bartering their votes on bills pending before the Legislature. Rodney J. Diegle, sergeant-at-arms of the Ohio Senate was convicted at Columbus recently on evidence furnished by means of the instrument.

Automatic Electric Increasing Its Foreign Business.

Consul General John P. Bray, stationed at Sydney, Australia, has forwarded to Washington the following statement regarding the Automatic Electric Co., of Chicago:

> There has been formed in this city the Automatic Telephones (Australasia) (Ltd.), with a capital of £250,000 ($1,215,000) for the purchase of the agency of the Automatic Electric Co., of Chicago, in the territory of Australia and New Zealand. The Automatic Electric Co. undertakes to sell automatic telephone equipment at special prices for cash f. o. b. Included in the agreement is an option of purchasing, at certain fixed prices and royalties, during the first two years of the agency agreement, the American concern's manufacturing and selling rights in Australia, also an option of purchasing the necessary machinery and plant (exclusive of power) f. o. b. Chicago, for the local manufacture of telephones, guaranteed equal to an output of 10,000 automatic equipments per annum.
>
> This flotation is the outgrowth of a demonstration made by the Chicago company of an experimental installation in the Sydney postoffice, under which department of government telephone administration is controlled. The same system obtains in New Zealand, and the company, therefore, can not sell telephones to the public without government sanction; that is, with assured connections with the trunk lines. The federal government, however, is now calling for tenders for automatic telephone equipment for Geelong in the State of Victoria, and it is there that the first general application of the automatic telephone will be made.

Regarding this, H. D. Critchfield, sales manager of the Automatic Electric Co., made the following comment: "The Automatic Electric Co. has just closed a sales agency contract with the Australian company above referred to, which is composed entirely of Australian people.

"The Australian government has called for tenders for automatic equipment for Perth and Geelong. These have been forwarded by the Automatic Electric Co., which is also now making estimates on installations for two of the largest cities in Australia for that government."

Mr. Critchfield also, in discussing the extension of the company's business in foreign fields called attention to the fact that the British government has been investigating the automatic system very closely and is now prepared to experiment with it in actual use.

"The British Post Office Department," said Mr. Critchfield, "has purchased the entire telephone system of the National Telephone Co., of Great Britain, and will take possession January 1, 1912. This places the British Post Office Department in full control of the entire telephone system of Great Britain.

"The department has called for tenders for two automatic installations; one at Epsom, Surrey, a suburb of London; and another for the general administrative offices of the General Post Office. Tenders under this call have been submitted by the Automatic Electric Co.

"Engineers of the British Post Office Department spent four months in America last winter investigating telephones and telegraph conditions, and the very great interest manifested by the government and newspapers of Great Britain in automatic telephony is largely due to their investigation."

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

PERSONAL.

W. A. WADSWORTH, formerly with the advertising department of the *American Telephone Journal*, and more recently with *Popular Electricity*, has been made eastern advertising manager for the Kenfield-Leach publications, of Chicago.

W. J. CHAPMAN, inventor of the Chapman lightning arrester and president of the Minnesota Electric Co., visited TELEPHONY recently on his way home to Minneapolis from Niagara Falls, where he attended the contractors' convention.

NEW COMPANIES.

FREDERICK, MD.—An Independent telephone company, composed of farmers southeast of this city, has been organized with George L. Kauffman, president; Harry B. Witter, secretary, and J. Travers Thomas, treasurer.

BEMIDJI, MINN.—The Eastern Mississippi Telephone Co. was recently organized, with officers as follows: Herman Eickstadt, president; John Swenson, vice-president; Albert Brewer, secretary, and William Haberle, treasurer. The line connects Bemidji, Frohn and Turtle River.

ALBANY, N. Y.—The Delaware & Beaverkill Telephone Co., formed to operate in Delaware, Sullivan and Ulster counties, has been incorporated with the secretary of state, with a capital of $5,000. The line is to pass through Union Grove, Turnwood, Dry Brook Valley, Arkville, Griffin Corners, Margaretville, Arena, Shavertown, Pepacton, Downsville, East Branch, Andes, Tremperskill, Livingston, Manor and Roscoe. The directors are: Emmett J. Shaver, of Mountain Lake; James D. Murdock, of Arena; Emery Jenkins, Frank Vausse, William Reed, L. Roy Jenkins and John W. Keator, of Union Grove.

NEW YORK, N. Y.—The New York Magnaphone & Music Co. has been incorporated with a capital of $10,000. The directors are: Geo. R. Webb, Chas. A. Benton, J. L. Blackwell, Benjamin Watkins, A. R. Whaley and O. W. Doty.

TROUPSBURG, N. Y. (Steuben Co.)—The Troupsburg and Young Hickory Telephone Co. has been incorporated. Capital $1,000. Directors for one year are: Lewis Grenolds, R. M. Bliss, William Colegrove, Elry D. Potter, Albert Potter, Clarence Bates and Michael Keegan, of Troupsburg. Company's headquarters, Young Hickory.

RALEIGH, N. C.—The Garner Telephone & Telegraph Co., of Garner, authorized capital $10,000, has been incorporated by: John T. Wrenn, McCullers; Henry Bryan, Garner, and Cash U. Harris, Raleigh.

MAXVILLE, OHIO.—The Maxville Telephone Co. has been incorporated with a capital of $10,000. S. S. Mohler, George Vanatia, John Bell, James H. Goodlive and Herman A. Wilson are incorporators.

PIKEVILLE, OHIO.—The Sandy Valley Telephone Co. has been incorporated by W. E. Johnson, R. M. Desknis and John W. Kerr. Capital, $10,000.

ALVA, OKLA.—North Eagle Chief Valley Telephone Co. was recently incorporated with a capital of $920. Directors are: John F. Parsons, Thomas J. Benton and John C. Raymer.

BUSHYHEAD, OKLA.—The Farmers Rural Telephone Co. has been incorporated by W. R. Rogers, Bushyhead; W. J. Strange, W. A. Howard and J. A. Johnson of Chelsea. Capital $2,250.

CLEVELAND, OKLA.—The Enterprise Telephone Co. was incorporated by T. M. Fishburn, J. A. Mendenhall and R. A. Robertson, all of Norman, Okla., R. F. D. No. 5.

HOLLIS, OKLA.—The Hollis Telephone Co., with a capital of $20,000, has been incorporated recently.

KONAWA, OKLA.—Orner Telephone Co. has been incorporated Directors are John T. Robnett, William I. Walker and Horne McFarland. Capital, $500.

PERRY, OKLA.—"Four D" Telephone Co. has been incorporated. Directors are: August Kehres, Joe Jarousek, George Lumber and Peter Gordon.

ASTORIA, ORE.—Articles of incorporation of the Nehalem Valley Telephone Co. have been filed in the county clerk's offices. The incorporators are: James Jamison, J. C. Pope and David Tweddle. The capital stock is $2,500.

VALE, ORE.—The Malheur Independent Telephone Co. was incorporated recently with $15,000 capital. J. A. Kennedy, H. S. Johnson and Harry Abram, incorporators. The company is incorporated for the purpose of obtaining control of all the lines in the county and is planning to extend its lines in every direction. At present it is working on an extension from Vale to Watson, about 50 miles from Vale.

BEDMINSTER, PA.—The Bedminster Telephone Co. has been incorporated here by Wm. S. Nichols, Lewis Keller, Joseph T. Diehl, John H. Nickel and Joseph Baum, with a capital of $5,000.

MUNCY, PA.—The West Branch Bell Telephone Co. has been organized recently. The incorporators are: Samuel Rogers, H. C. Heilman, T. B. Eaker and Frank M. Opp. The capital is $50,000.

COLUMBIA, S. C.—The Bailey-Armstrong Telephone Co., of Greer, has been organized with a capital of $200. The incorporators are: J. H. Armstrong, E. H. Armstrong and R. R. Dempsey.

COLUMBIA, S. C.—The Farmers' Mutual Telephone Co., of Gaston, has been chartered with a capital of $1,000. The officers are W. B. Tallaw, president; J. H. Price, vice-president; V. L. Goodwin, secretary; W. D. Pound, treasurer.

GASTON, S. C.—The Farmers' Mutual Telephone Co. has recently been incorporated by W. B. Tallaw.

EDGEMONT, S. D.—The Edgemont Telephone Co. has been chartered with an authorized capital stock of $10,000. Incorporators are A. J. Calgan, president, and W. F. Wyatt, secretary.

BROCKIN, TENN.—The Brockin Town Mutual Home Telephone Co., Sumner County, capital $750, has been incorporated by W. B. Perdue, J. W. Lambert, B. F. Lovell, R. E. Perdue and M. Perdue.

BARRY, TEX.—Dr. D. W. Vest, J. W. Denton and others have incorporated the Vest Telephone Co. at Barry, capital stock being $20,000.

BRENHAM, TEX.—The Brenham & Welcome Telephone Co. has been incorporated recently and will build a line from Welcome and Bliebersville to Brenham, a distance of fifteen miles, with sixteen miles of tributary length. The following are the officers elected: C. Hohlt, president; H. W. Hohlt, vice-president; C. Luedeker, secretary; H. Krueger, treasurer; H. Wittenben, purchasing agent; H. Lindeman, assistant; B. Wehring, B. Wicker and J. Wicker, finance committee.

EMORY, TEX.—Rains County Rural Telephone Co., with a capital of $2,000, has been granted a charter. Incorporators are: B. F. Pippin, J. A. Amis, B. A. Carter and M. J. Arrington.

HUMBLE, TEX.—The Home Telephone Co. was chartered with $3,500 capital stock. F. M. Burton, E. W. Corley and Matt McEnte are the incorporators.

TYLER, TEX.—The Talbert Telephone Co. has been incorporated, capital $25,000. J. A. Talbert, J. C. Smith and M. Starnes are the incorporators.

CHELAN, WASH.—The Knapp's Coulee Telephone Co. has been organized recently. The company will build a line through Knapp's Coulee to Chelan, which will accommodate fifteen ranches. George W. Wilson is president and M. A. Almandinger, secretary.

ILO, WASH.—A rural telephone company, to be known as the Salmon River Co-operative Telephone Co., was organized to construct a sixteen-mile metallic system extending from Ilo to the mouth of Maloney Creek on Salmon River. The officers are: Bert Tefft, president and manager; Thomas Stevens, secretary; and W. A. Miller, treasurer.

OROVILLE, WASH.—J. P. Andersib has put in operation a complete and well-constructed and equipped local telephone system, covering the entire business and some of the residence portion of the town. The line already has 60 patrons.

DUNLOW, W. VA.—The Wayne Dunlow Telephone Co. has been granted a charter. The authorized capital is $5,000. Incorporators: S. W. Porter, J. H. Thornburg, of Dunlow; T. J. Preston, of Quaker, W. Va.; W. E. Hardwick, of Genoa, W. Va.; and D. E. Hardwick, of Wayne, W. Va.

KENOVA, W. VA.—The Docks Creek Telephone Co. has been organized to construct and operate a telephone line in Wayne county. The capital stock is $1,000. The incorporators are: Lewis Rakes, John Skean, L. B. Chadwick, and Frank Mitchell, of Kenova.

MT. STORM, W. VA.—The Allegheny Mutual Telephone Co. has been chartered with capital of $4,000. J. H. Shaeffer of Mt. Storm, R. F. Secrist of Scherr, W. Va.; J. L. Aronhalt of Gormania, W. Va., and others, are the incorporators.

HOLMEN, WIS.—The Holmen Telephone Co., with a capital of $25,000, was recently incorporated by B. Keppel, A. O. Casberg, Julius Berg, W. D. Sandiman, J. M. Holderson and C. B. Slettland.

TRENTON, TENN.—The Gibson County Telephone Co., which was recently incorporated has finished the installation of its Trenton exchange. Manager Sims reports that lines will be run to all the parts of the county.

MADISON, WIS.—The Clover Telephone Co., of the town of Clover, Bayfield county, with a capital of $3,000, was incorporated recently by Peter Soronen, Jr., Otto E. Kauppi and Herman Luoma.

MARINETTE, WIS.—The Harmony Telephone Co., with a capital stock of $10,000, has been organized at Harmony Corners and will connect with Marinette. The incorporators are as follows: President, J. H. Tiedjens; vice-president, D. J. Armstrong; secretary, Frank Fuhrman; treasurer, E. F. Christine, and manager, H. L. Reeves, Oconto.

RED GRANITE, WIS.—The Red Granite Telephone Co. has been incorporated by William Bannermann, Louis Lueck, and Frank W. Carley. The capital stock is $4,000.

VIROQUA, WIS.—The Brookville Co-operative Telephone Co. has been incorporated recently by H. F. Swain.

CHEYENNE, WYO.—The Lyman Telephone Co. has filed articles of incorporation with the secretary of state. Capitalization, $10,000.

SUNDANCE, WYO.—The Inyan Kara Telephone Co. of Sundance, with a capital of $5,000, has been incorporated recently.

FINANCIAL.

HARTFORD, CONN.—The East Haven Telephone & Electric Co. has recently increased its capital stock from $5,000 to $10,000.

CHEBOYGAN, MICH.—The capital stock of the Cheboygan Telephone Co. has been increased from $30,000 to $70,000.

ALBANY, N. Y.—The Albany Home Telephone Co. has paid its twenty-second quarterly dividend of 1 per cent.

CLEVELAND, O.—The United States Telephone Co. has declared the regular quarterly dividend of 1½ per cent. on its preferred stock.

The stockholders of the Leesburg Telephone Co., Leesburg, Va., voted to increase the maximum capital stock from $10,000 to $25,000, to provide for improvements and extensions.

SHEBOYGAN, WIS.—The Mosel-Centerville Telephone Co. has filed an amendment increasing its capital stock from $15,000 to $25,000.

CONSTRUCTION.

NEVADA CITY, CAL.—The Tahoe National forest has let contracts for constructing telephone lines in various parts of the forest. William Ebbert has been granted the contract to build thirty-nine miles of line from Forest Hill, Placer county, to French Meadows. The bid of I. N. Hamilton to build forty-three miles of telephone line from North Bloomfield to within four miles of Sierraville, has been accepted subject to the approval of the district forester. Within a few days the construction of the telephone line to the lookout station on top of Banner Mountain will commence. The work will be done by James Poore and W. E. Parsons.

SAN DIEGO, CAL.—President Horace B. Day, of the Home Telephone Co., has announced that his company would at once spend $35,000 in extensions. It is the purpose of the company to extend its lines to all outlying districts. The extensions will increase the number of telephones in use 17 per cent. A substation will be built on Normal Heights.

DALTON, GA.—The Dalton Telephone Co. is stringing cables, which will soon cover the entire city. The work will cost approximately $7,000.

PEORIA, ILL.—Work has been started on the new copper toll line that is being built by the Inter-State Independent Telephone & Telegraph Co., from Peoria to Bloomington. The line now under construction is to be a three-circuit copper line and will give toll users a direct connection between here and Bloomington. This line will also be used for Chicago business The construction of the Bloomington line will be under the direct supervision of G W. Pringle, managing superintendent of the Peoria plant of the Inter-State company.

CLEVELAND, OHIO.—At the meeting of the board of directors of the United States Telephone Co., Frank A. Davis, of Columbus, who also is president of the Columbus Citizens Telephone Co., was elected president; E. R. Sharp, president of the State Savings Bank & Trust Co., vice-president; W. L. Cary, of Columbus, secretary and counsel; H. B. Taylor, of Columbus, treasurer; Gansey R. Johnston, general manager of the Columbus Citizens company, general manager.

KLAMATH FALLS, ORE.—Under the direction of Supervisor Erickson, of the Crater national forest, a telephone line is being built in the forest about seventy-five miles in length. When this work is finished there will be fully 150 miles of telephone line in the reserve, which in addition to being a great help in the protection of the forest from fires, will also place all parts of the reserve in direct communication. A number of rangers' cabins are being built and equipped with telephones.

ANATONE, WASH.—A telephone line from Montgomery ridge to Anatone is being constructed. It will connect with the central at Anatone. Mrs. J. C. Packwood is manager of the office.

ELECTIONS.

DUNDEE, N. Y.—The Dundee Telephone & Telegraph Co. has elected the following officers for the coming year: President, Silas A. Price; vice-president, Dr. Albert J. Price; secretary and treasurer, Floyd L. Price; directors, S. A. Price, A. J. Price, F. L. Price, M. M. Price, M. D. Sproul, E. L. Sproul and C. A. Gilbert.

ROSEVILLE, ILL.—The stockholders of the Roseville Telephone Co. held a meeting recently and elected the following officers for the ensuing year: President, Nery Kirkpatrick, Roseville; vice-president, Allen Adkinson, Roseville; secretary-treasurer, W. J. McQuiston, Monmouth; manager, Walter Waugh, Roseville.

POMEROY, OHIO.—At a recent meeting of the stockholders of the Pomeroy & Middleport Telephone Co., the following directors were re-elected as follows: George Schlaegel, W. M. Cray, Max Wildermuth, B. E. Talbott, Dr. L. F. Roush and Loff Jacobs.

REITZ, PA.—The Central Telephone Co. has held its annual election and elected the following officers: A. I. Mock, president; J. M. Wagner, vice-president; Washington Custer, secretary, and J. C. Lambert, collector and treasurer. In addition to these officers the directors are Jacob McGregor, F. M. Menges, Washington Custer, Daniel Wagner and J. H. Reitz.

BEDFORD CITY, VA.—The Big Island & Bedford City Telephone Co. has elected the following officers for the ensuing year: S. R. Watson, president; J. E. Wheat, vice-president; J. E. Wood, secretary-treasurer and general manager.

LEESBURG, VA.—At the annual meeting of the stockholders of the Leesburg Telephone Co. the following board of directors were elected: Charles P. Janney, William E. Garrett, W. S. Jenkins, C. C. Gaver, M. E. Church, Henry Fairfax and C. H. Shipman. Directors met and re-elected the following officers: C. P. Janney, president; W. S. Jenkins, vice-president; M. E. Church, general manager; S. L. Northrup, secretary and treasurer; C. H. Shipman, agent.

JANESVILLE, WIS.—At the regular meeting of the Rock County Telephone Co. held recently, the old officers were re-elected as follows: Dr. F. B. Farnsworth, president; J. L. Bostwick, vice-president; Hiram Murdock, treasurer, and Richard Valentine, secretary and general manager. Isaac Connors is a member of the board of directors.

FORDYCE, ARK.—The meeting of the board of directors of the Southern Telephone Co. was recently held and the following officers elected: A. B. Banks, president; H. A. Longino, secretary; David A. Gates, vice-president; A. Amis, treasurer; H. A. Conch, re-elected general manager; and J. H. Meek, supersisor of accounts.

CLINTON, IA.—The directors of the Tri-City Automatic Telephone Co. elected officers for the ensuing year as follows: President and general manager, A. G. Hawley; secretary and treasurer, C. B. Cheadle; local manager, R. M. Matteson. The directors are: Milo John, Louis Moeszinger, V. G. Coe, George W. Allen, J. H. Peters, C. B. Cheadle, F. J. Spencer, J. O. Barrett and A. G. Hawley.

WAYNESBORO, PA.—The Blue Ridge Mountain Telephone Co., which was reorganized recently, elected Dr. A. Barr Snively, president, and Charles S. Gardner, secretary.

DAYTON, WASH.—The Mount Vernon Telephone Co. has been reorganized and its plant reconstructed. The new officers are: J. W. Stevens, president and treasurer; James Thorne, secretary. This line runs out from Dayton twelve miles to the Granger place on Eckler Mountain.

UNDERGROUND.

BALTIMORE, MD.—The Chesapeake & Potomac Telephone Co. has appropriated $26,000 for replacement work and construction in trunk lines. It will expend $11,600 for conduit and underground cable work and $4,000 to erect aerial cable on York Road.

FREDERICK, MD.—The Chesapeake & Potomac Telephone Co. will construct underground conduits. There will be laid 3,690 feet of conduit, of which 2,780 feet will contain four ducts and 910 feet will contain three ducts. The work will be done by the company's force under the supervision of W. B. Beals, engineer, 5 Light street, Baltimore, Md.

STILLWATER, MINN.—The Northwestern Telephone Exchange will clear the streets, in the business portion of the city, of poles and wires and will place all wires in underground conduits.

FREMONT, NEB.—The Nebraska Telephone Co. is placing its wires underground.

HOUSTON, TEX.—The Automatic Telephone Co. is placing its wires underground and fourteen miles of conduits have been laid.

MISCELLANEOUS.

HUDSON, KAN.—A meeting of the stockholders of the German Valley Telephone Co. was held recently. At this meeting the German Valley people decided to take over the Happy Valley telephone interests in Hudson and to establish free connections between the two lines.

MOUND VALLEY, KANS.—Petitions asking that the city commissioners of Independence call an election for a vote upon the question of establishing a municipal telephone system have been filed with the local board.

WILKESBARRE, PA.—Stockholders of the Farmers' Supply & Telephone Co. have purchased the Luzerne and Columbia Counties Telephone Co., for a consideration of $7,000.

UNION GROVE, DEL.—The Delaware & Beaverkill Telephone Co. has recently been incorporated with a capital stock of $5,000. The directors are: J. W. Keator, L. Roy Jenkins, William Reed, Frank Vausse, Emery Jenkins, James D. Murdock, Arena; and Emmett J. Shaver, Mountain Lake.

In the Rural Line Districts

The Social Telephone Co. held their annual meeting for the election of officers June 6. The company originated in Hecla but has long since outgrown this neighborhood and now has about five hundred miles of wire.—*Aberdeen (S. Dak.) News.*

P. S. Troutman, who has the franchise to establish a telephone system at Wann, is looking over the ground getting ready to begin work.—*Coffeyville (Kan.) Journal.*

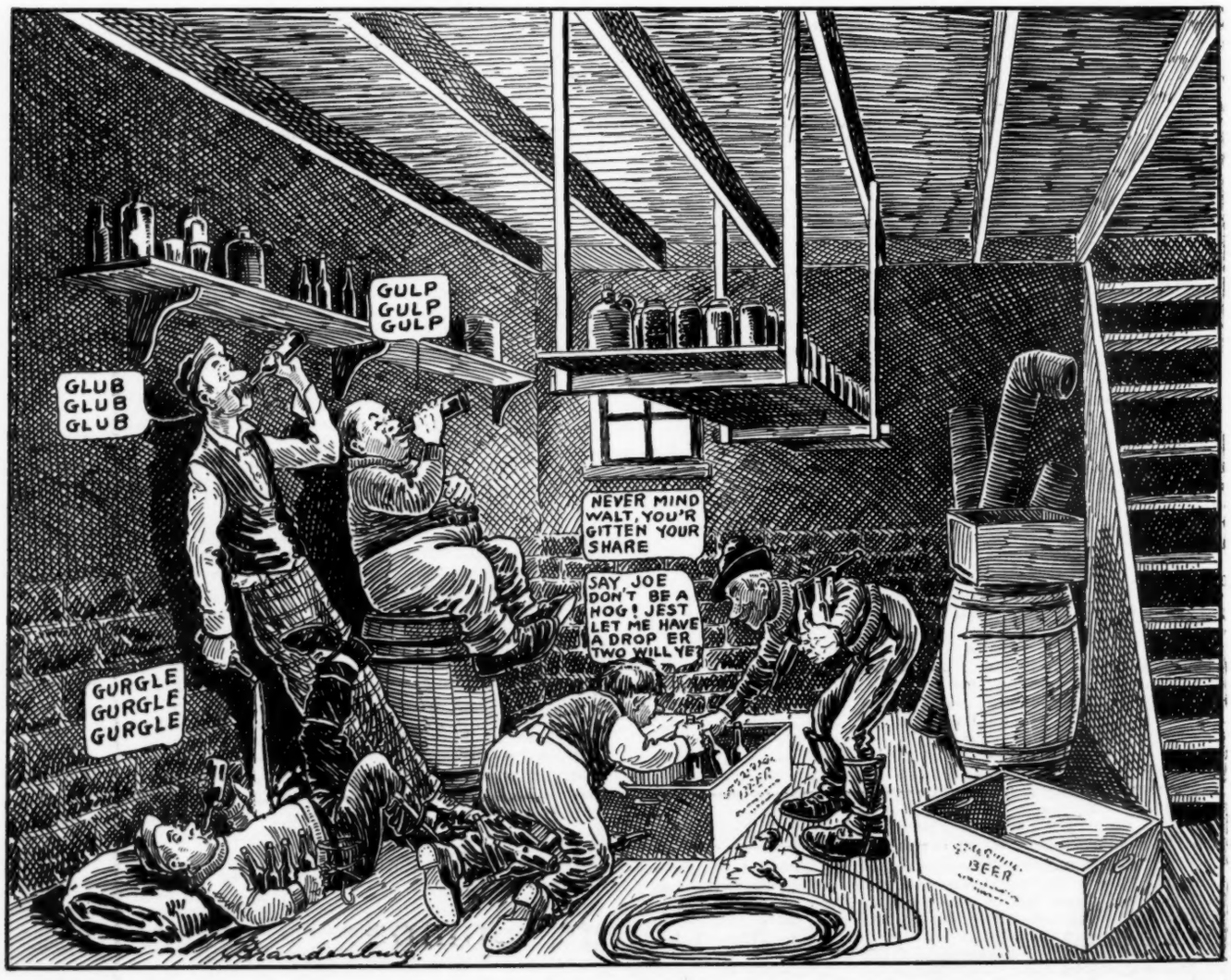
Mrs. Kennett, of Dakota City, Neb, is the new chief at the central office for the Centerville Telephone Exchange Co., and the service seems to be picking up again.—*Centerville (S. Dak.) Journal.*

The telephone troubles at Good Hope have finally been settled out of court and all the country lines centering there are working in harmony.—*Bushnell (Ill.) Democrat.*

The Shelbyville and Shelbina telephone companies have received a car of cedar poles and will construct a telephone line from this city to Shelbina with metallic circuits. There will be no toll charges over this line, but it will be used strictly for business. So let it be.—*Shelbyville (Mo.) Herald.*

Jack Jones says a telephone company is a private corporation conducted for convenience and profit and the managers and owners of it should arrange to hire sufficient help to relieve the girl operators who work all week from Sunday work. In other words, the girl who works six days shouldn't work the seventh day. Six days' work is enough for anyone—*Hiawatha (Kans.) World.*

The Eureka Telephone Co. had a force of men at work early Tuesday morning setting new poles to replace the ones snapped off by the wind. The S. A. N. W. Telephone Co.'s new cable was severed where it passes Mr. Louis Lich's place. This was cut by a flying section of 12-foot iron roofing which struck the ground at the corner of Comfort State Bank building.—*Comfort (Texas) News.*


GULP GULP GULP
GLUB GLUB GLUB
GURGLE GURGLE GURGLE
NEVER MIND WALT, YOU'R GITTEN YOUR SHARE
SAY JOE DON'T BE A HOG! JEST LET ME HAVE A DROP ER TWO WILL YE?
BEER
BEER

Yesterday five of the linemen on the Monmouth Telephone Co. resigned, and thereon hangs a story. The work of the linemen was all that their employers could ask, but they had their own reasons for resigning. Several days ago these men had been sent to a certain flat to do some work for the company. At this place the lady of the house had been required by her physician to keep beer in her cellar for medicinal purposes. While employed at the place it was necessary for the aforementioned linemen to go to the cellar. There it is said the patron kept a quantity of beer and it was missed after their departure. When the matter reached the ears of the managers of the telephone company there was a consultation between the officials of the company and the linemen. The result was the resignation of the latter. The company regrets the occurrence very much. *Monmouth (Ill.) Atlas.*